

JX-8P/PG-800

SERVICE NOTES

First Edition

SPECIFICATIONS

Keyboard

61 keys

Memory Capacity

Preset	64 Patch Programs
Internal Memory	32 Patch Programs
External Memory (Memory Cartridge)	32 Patch Programs

Output

Stereo/Mono	: 5Ω
Headphones	: 8Ω, Stereo

Dimensions

977(W) x 375(D) x 92(H) mm
 38-7/16"(W) x 14-3/4"(D) x 3-9/16"(H)

Weight

11.5kg
 25 lb 60 oz

Consumption

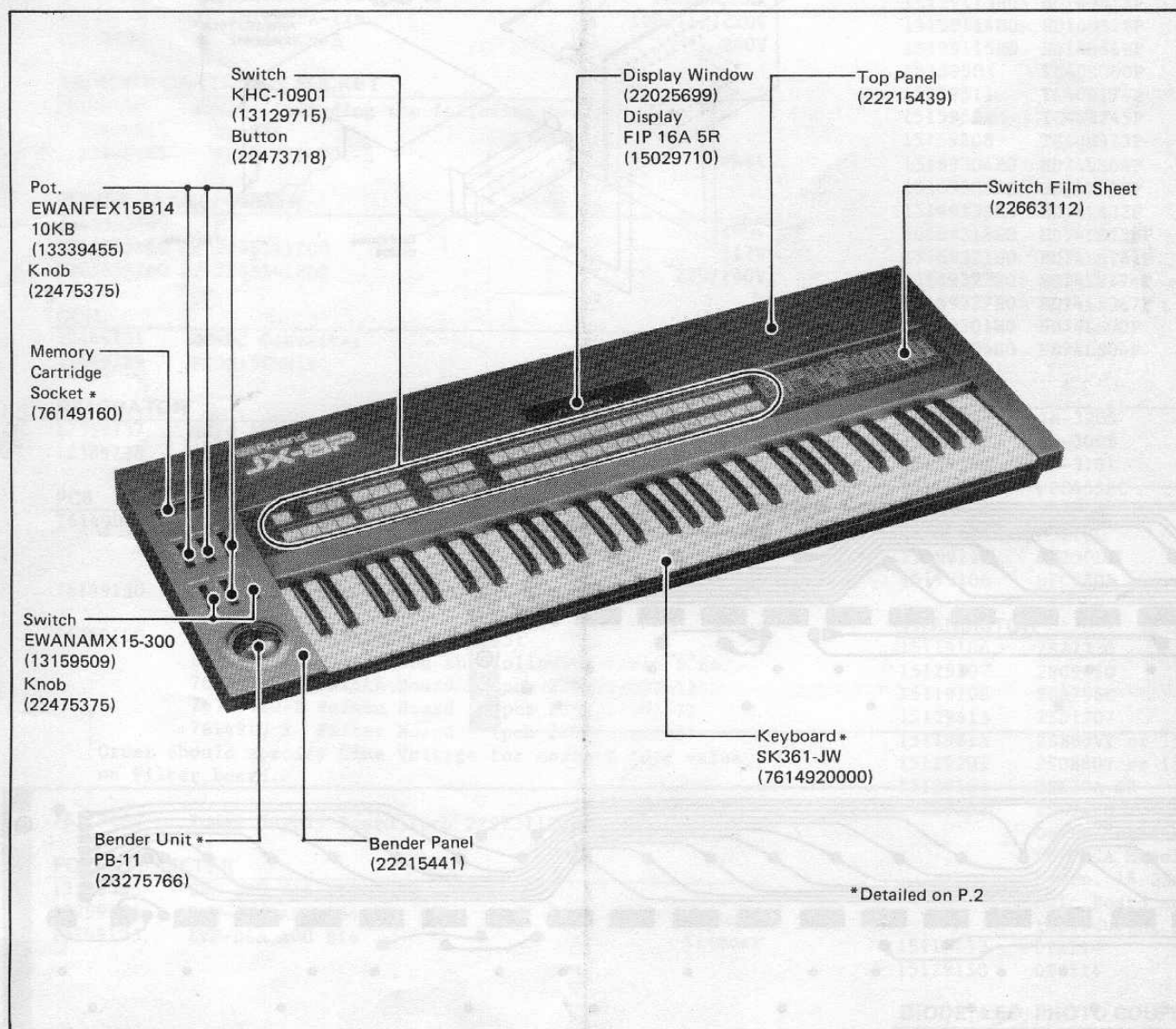
25W

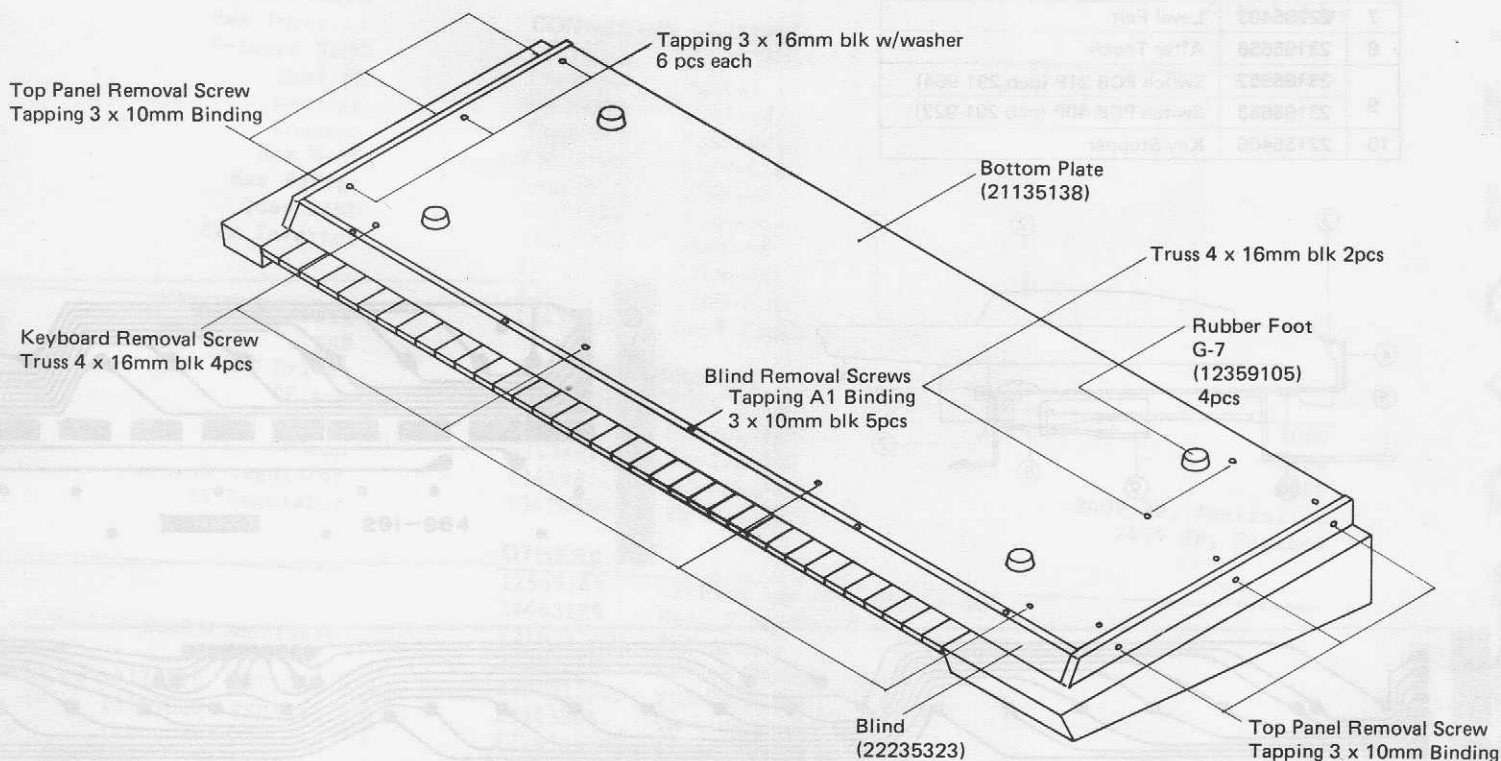
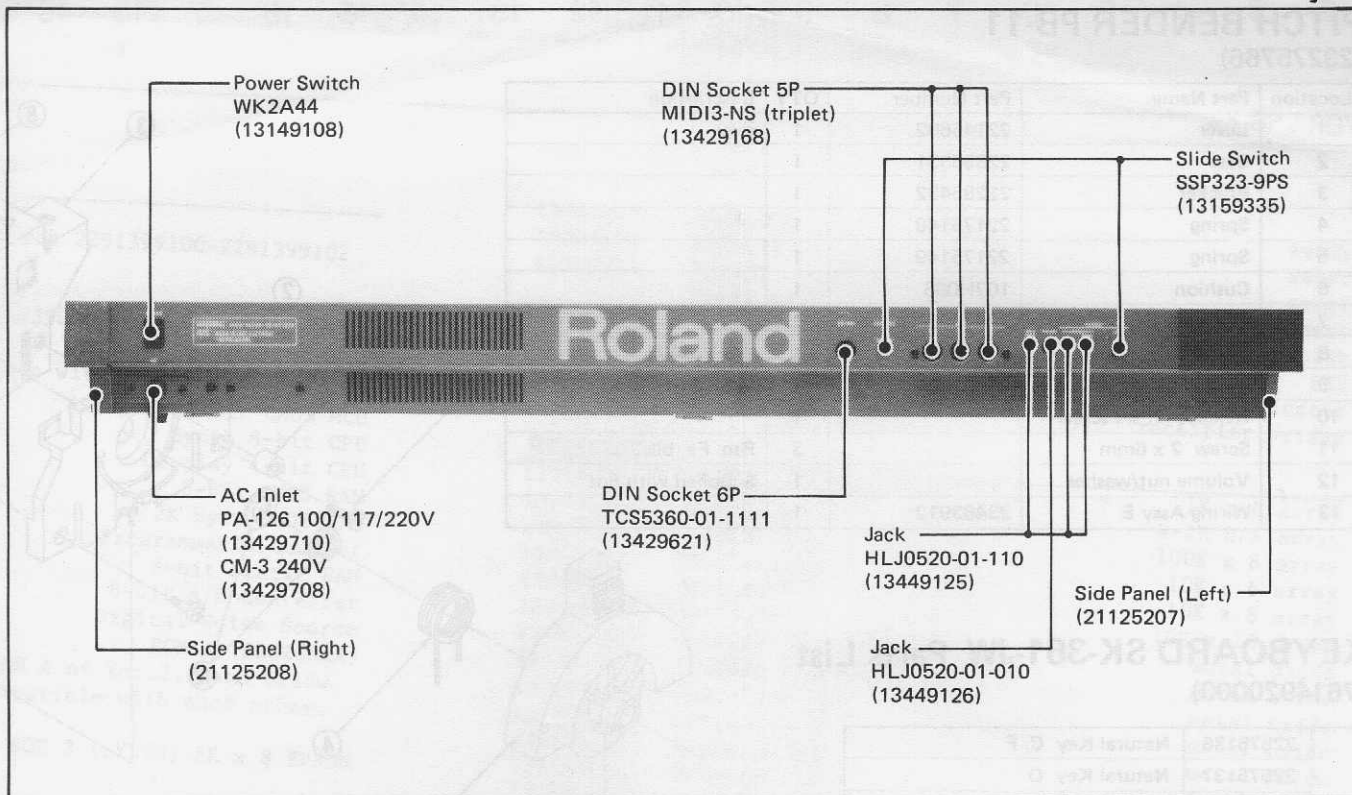
Accessories

Connections Cables x 2

Options

Programmer PG-800
 Memory Cartridge M-16C
 Pedal Switch DP-2
 Carrying Case AB-2





PITCH BENDER PB-11

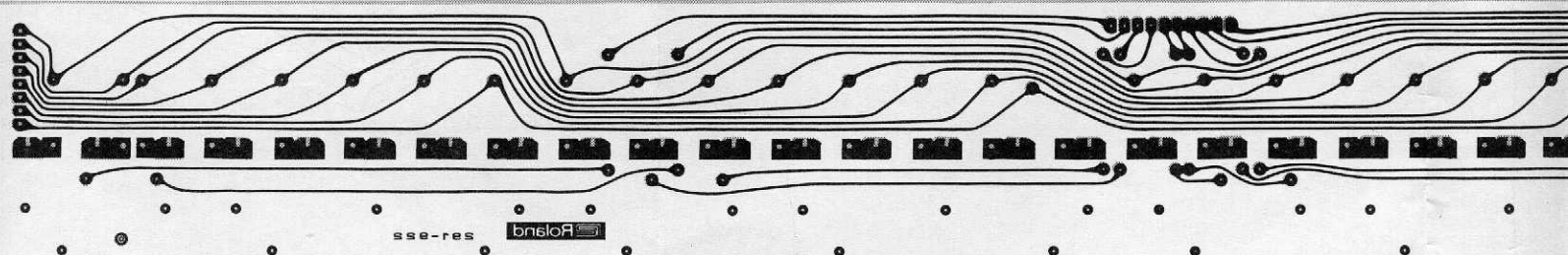
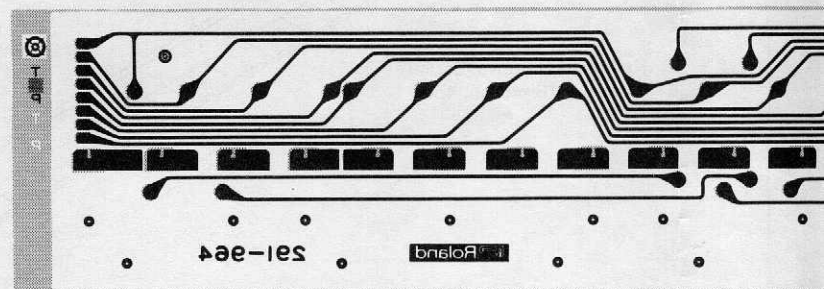
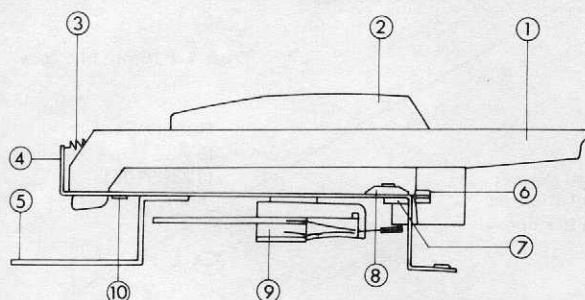
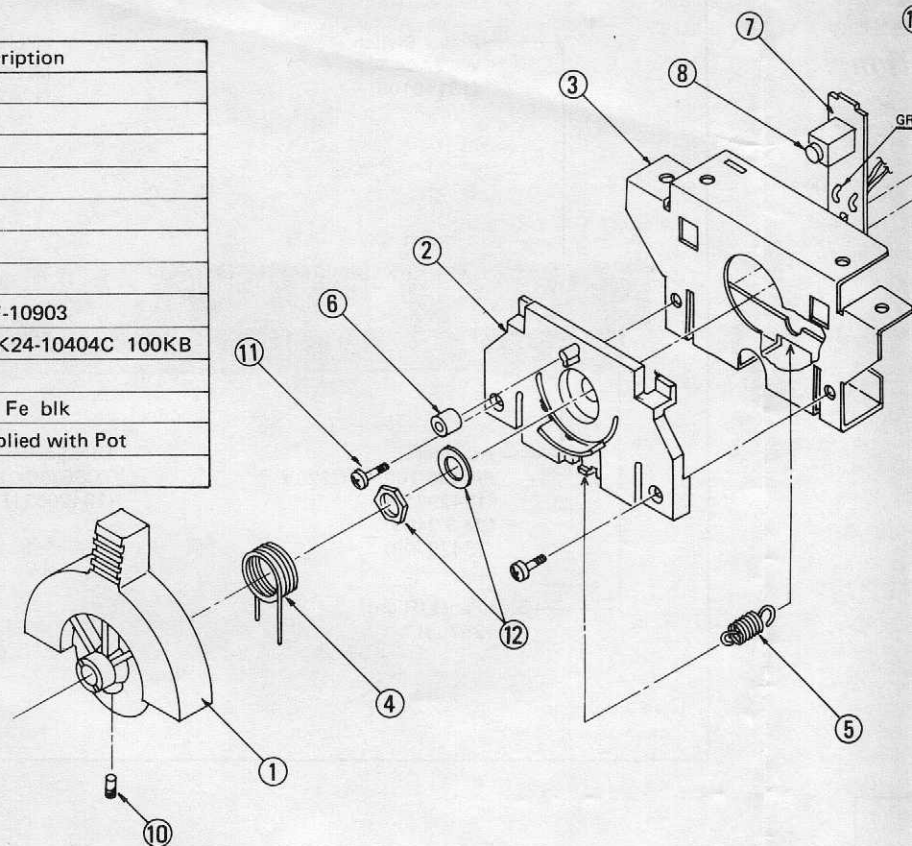
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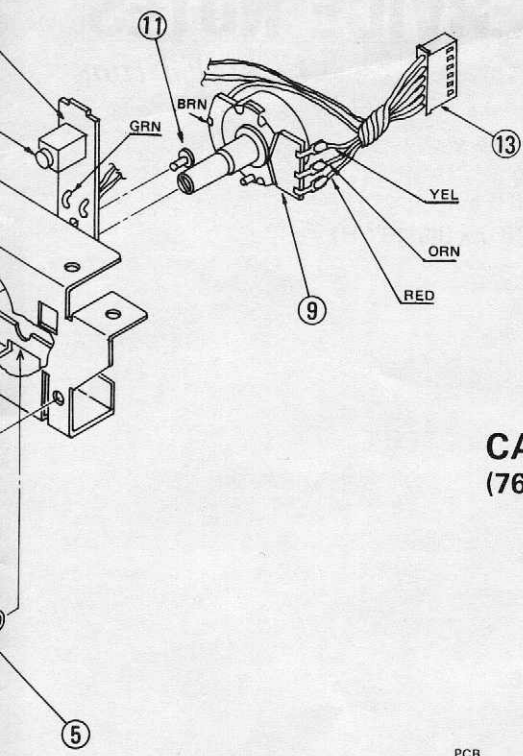
Location	Part Name	Part Number	QTY	Description
1	Lever	22145602	1	grey
2	Base	22355331	1	
3	Bracket	22285432	1	
4	Spring	22175148	1	
5	Spring	22175149	1	
6	Cushion	107H066	1	
7	PCB	22915933	1	
8	Switch	13169609	1	KEF-10903
9	Potentiometer	13259701	1	S20K24-10404C 100KB
10	Hex socket set screw		1	
11	Screw 2 x 6mm		3	Pan Fe blk
12	Volume nut/washer		1	Supplied with Pot
13	Wiring Assy E	23463912	1	

KEYBOARD SK-361-JW Parts List

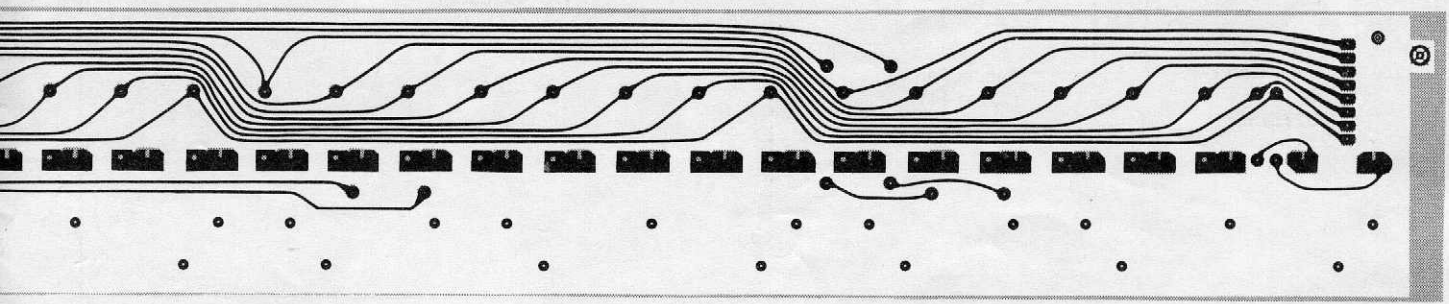
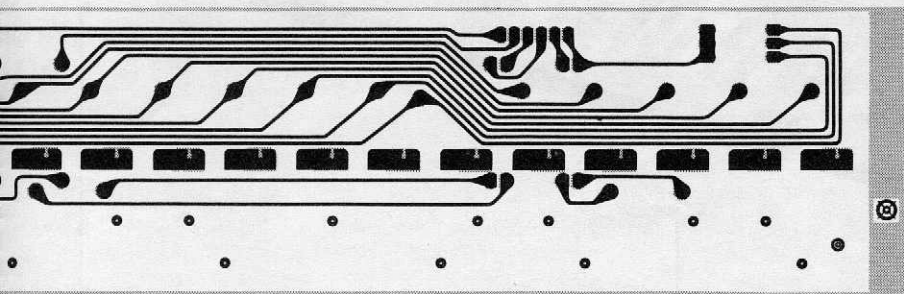
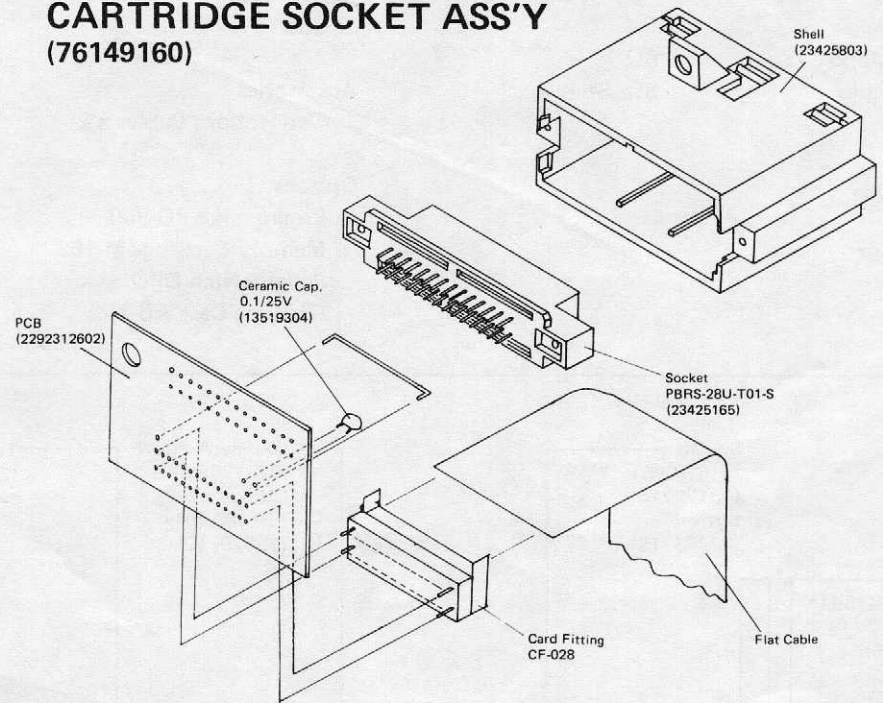
(7614920000)

1	22575136	Natural Key C, F
	22575137	Natural Key D
	22575135	Natural Key E, B
	22575138	Natural Key G
	22575134	Natural Key A
	22575139	Natural Key C, F
2	22575140	Sharp Key
	22175132	Natural Keyspring
3	22175133	Sharp Keyspring
4	22815468	Chassis
5	22035120	Chassis Stand
6	22155716	Guide Bushing
7	22265403	Level Felt
8	23165656	After Touch
9	23165652	Switch PCB 21P (pcb 291-964)
	23165653	Switch PCB 40P (pcb 291-922)
10	22135406	Key Stopper





CARTRIDGE SOCKET ASS'Y (76149160)



PARTS LIST (JX-8P)

PANEL, CASING

22215439	Top Panel	
22215441	Bender Panel	
22663112	Switch Film Sheet	
22025699	Display Window	
21135138	Bottom Plate	
22235323	Blind	
21125207	Side Panel	Left
21125208	Side Panel	Right
22125166	Plate	Side Panel Holder, Right
22195519	Angle	Same for both R, L

KNOB, BUTTON

22475375	Knob	Bender Panel
22473718	Button	KHC-10901

SWITCH

13159509	EWA-NAM X15 300	Portamento ON/OFF, Bend Range Select
13159335	SSP323-9PS	Output Level, Memory Protect
13129715	KHC-10901	Panel, Touch
13149108	WK2A44	Power

JACK, SOCKET

13449125	HLJ-0520-01-110	OUTPUT, HOLD
13449126	HLJ-0520-01-010	PHONES
13429168	MIDI3-NS DIN 5P (triplet)	MIDI
13429621	TCS5360-01-1111 DIN 6P	PROGRAMMER
13429710	AC Inlet PA-126	100/117/220V
13429708	AC Inlet CM-3	240V

MEMORY CARTRIDGE SOCKET

76149160	Ass,y (including the following two)	
23425803	Shell	
23425165	PBR5-28U-T01-S	Socket

POWER TRANSFORMER

22455355N0		100V
22455356C0 or 22455417C0		117V
22455357D0 or 22455418D0		220/240V

COIL

12449251	DC-DC Converter	
12449229	FKOB160MH15	Line Filter

RESONATOR

12389737	HC/U 16MHz	Crystal
12389738	CSB400P	Ceralock

PCB

76149060	Main Board (pcb 2291399102) or (pcb 2291399104) SN530350-up	
76149130	Switch Board 1 (pcb 2292311401)	
76149100	Switch Board 2 (pcb 22923115) Splittable, including the following three PCBs: 76149120-1 Switch Board 2 (pcb 2292311502-1) 76149120-2 Volume Board (pcb 2292311502-2) 7614910 X Filter Board (pcb 2292311502-3) Order should specify Line Voltage for correct fuse value on Filter Board.	
76149180	Power Supply Board (pcb 22923112)	

POTENTIOMETER

13339455	EWA-NFE X15 B14	
13299193	EVN-D4A A00 B54	Trimmer
13299195	EVN-D4A A00 B14	Trimmer

IC (Digital)

15229824	MB63H130	Dynamic Gate Array for pcb 2291399
	or	
15229830	MB63H149	Dynamic Gate Array SN530350-up or up.
		Both ICs are incompatible with each other.
15179203	HD63B03	Assigne
15179319	i-8051-319	
15179201	UPD7537-014	
15179342	HM6116-2	
15179317	TC5517APL	
15179110N0	UPD8253C-2	Prog
15179341	UPD8155HC	
15219150	UPD7001C	8-b
15219149	MM5437	Digi
15179675	M5L-27128K-2	
		16K x 8, 200ns EPROM (ROM A of Ver. 1.0 and of Ver.3.0 are incompatible with Ver. 2.0. See CHANGE INFORMATION).
15179674	TMM2764	ROM B (SYN
	or	
15179699	M5L-2364-211P	
		Upward compatible from EPROM B's since there is no difference between versions in program.
15159128H0	HD14050BP	
15159113H0	HD14051BP	
15159114H0	HD14052BP	
15159115H0	HD14066BP	Qu
15159503	TC40H000P	
15159511	TC40H174P	
15159524	TC40H245P	
15159508	TC40H373P	
15169304H0	HD74LS04P	
15169308H0	HD74LS30P	
15169339H0	HD74LS32P	
15169318H0	HD74LS138P	
15169321H0	HD74LS161P	
15169322H0	HD74LS174P	
15169327H0	HD74LS367P	
15169301H0	HD74LS00P	
15169304H0	HD74LS04P	

IC (Analog)

15229826	IR-3R05	
15219213	MN-3009	
15169504	MN-3101	
15189105	UPC4558C	
15189154	TL-064	
15189136	M5218L	
15199117	M5230L	
15199106	UPC7805	

TRANSISTOR

15119106	2SA733Q	
15129107	2SC945Q	
15119108	2SA798G	
15129613	2SD1207	
15119815	2SB834Y or 15119814	2SB1015 or 15119815
15129201	2SD880Y or 15129827	2SD1406 or 15129827
15139103	2SK30A-GR	
15129107	2SC945Q	
		Gm selected for Q15, Q16 and Q19 of VCF/VCA Module; dotted in Red, Orange or Green. 18 2SC945Q (3 for each voice channel). Main Board should be of the same type as reproducing uniform timbre.
15119133	DTA114	di
15129150	DTC114	di

DIODE, LED, PHOTO COUPLER

15019125	1SS-133	
15019143	1SS-116	

1130
ic Gate Array for pcb 2291399100-2291399102

1149
ic Gate Array SN530350-up or pcb 2291399103-

ICs are incompatible with each other.

003 Assigner 8 bit CMOS MCU

1-319 Synth 8-bit CPU

37-014 Display 4-bit CPU

6-2 8-bit CMOS RAM

7APL 2K byte CMOS RAM

53C-2 Programmable Counter

55HC 8-bit Static RAM

01C 8-bit A/D Converter

7 Digital Noise Source

7128K-2 ROM A (ASSIGNER)

8, 200ns EPROM (ROM A of Ver.2.2 and below

f Ver.3.0 are incompatible with each other.

CHANGE INFORMATION).

64 ROM B (SYNTH) 8K x 8 EPROM

2364-211P ROM B Mask ROM

and compatible from EPROM B's of all versions

e there is no difference between ROM B

ons in program.

50BP Hex Buffer

51BP Analog Switch

52BP Analog Switch

66BP Quad Analog Switch

000P CMOS Inverter

174P CMOS D-FF

245P CMOS Driver

373P CMOS Latch

504P Hex Inverter

530P 8-input NAND

532P Quad OR

5138P Decoder

5161P Counter

5174P Hex D-FF

5367P Hex Buffer

500P Quad NAND

504P Hex Inverter

05 VCF-VCA Pack

09 BBD

01 BBD Driver

58C OP amp

4 Quad OP amp

3L OP amp

0L V-regulator

05 5V Regulator

3Q

5Q

8G dual transistor

07

4Y or 15119814 2SB1015 or 15119819 2SB507

0Y or 15129827 2SD1406 or 15129820 2SD313

0A-GR

5Q

ected for Q15, Q16 and Q19 of Main Board

VCA Module; dotted in Red, Orange, Yellow or

n. 18 2SC945Q (3 for each voice) on a given

Board should be of the same color dot for

oducing uniform timbre.

4 digital transistor

4 digital transistor

TO COUPLER

33
16

15019607 05Z6.2X zener

15019603 05Z9.1Z zener

15019605 05Z43Y zener

04AZ3.0 zener

15229706 TLP-552 photo coupler

15029177 GL-5HD5 LED

15029710 FIP 16A 5R fluorescent indicator

15019236 W02 rectifier bridge

RESISTOR

13919335 RGLD 6 x 102J 1K x 6 array

13919146 RKM14L503F R-2R D/A array

13919313 RMLS 8-104J 100K x 8 array

13919308 RMLS 6-103J 10K x 6 array

13919310 RMLS 8-103J 10K x 8 array

13919321 RML13-103J 10K x 13 array

13799710D0 CRB20FX 10k Ω metal oxide

13799725D0 CRB20FX 330k Ω metal oxide

13799724D0 CRB20FX 6.8k Ω metal oxide

13799723D0 CRB20FX 4.7k Ω metal oxide

13769173K0 SN14K2EF 10k Ω metal oxide

13769182K0 SN14K2EF 24k Ω metal oxide

13769161K0 SN14K2EF 3.3k Ω metal oxide

15229921 ERSA33G561T 560 Ω posistor

CAPACITOR

13529104 DE7150F472MVA1 line bypass

13549216Y0 0.01 μ F 50V, G (\pm 2%) film

13529116 DD107SL221G50V 220pF, 50VG

FUSE, FUSE HOLDER

12559336 GGS 2A 100/117V

12559508 CEE T250mA 220/240V

12199552 UF0005-02 fuse holder

CONNECTOR HOUSING

13439266 5267-10A

13439267 5267-12A

13439277 5267-14A

13439261 5267-04A

13439285 5268-03A

13439272 5268-04A

13439273 5268-06A

13439270 5268-08A

13439274 5268-09A

13439276 5268-12A

13439280 Card Fitting CF-028

AC CORD, CORD SET

13439801 PVFF 2.5m 100V

13439812F0 VC-704-J01 117V

13439813F0 EC-210-J01 220V

13439814F0 SC-415-J06 240V 3P, Australian

13436846 BH-301-J01 240V 3P, England

OTHERS

12569149 Lithium Battery BR2325-HC

22463129 Heat Sink 246-129

2216353401 FIP Spacer

22253118 Bender Shield Cover

2225311901 Shield Cover

22263309 Cushion

2224345202 Slide Pot Cover

2267350201 Cover 267-502

2202569902 FCD Cover 202-699 display window

23275766 Bender PB-11

1347915901 Sumi Card

SMCD28x800-BD10 P1.25 flat cable

23463908 Wiring Ass'y A

23463909 Wiring Ass'y B

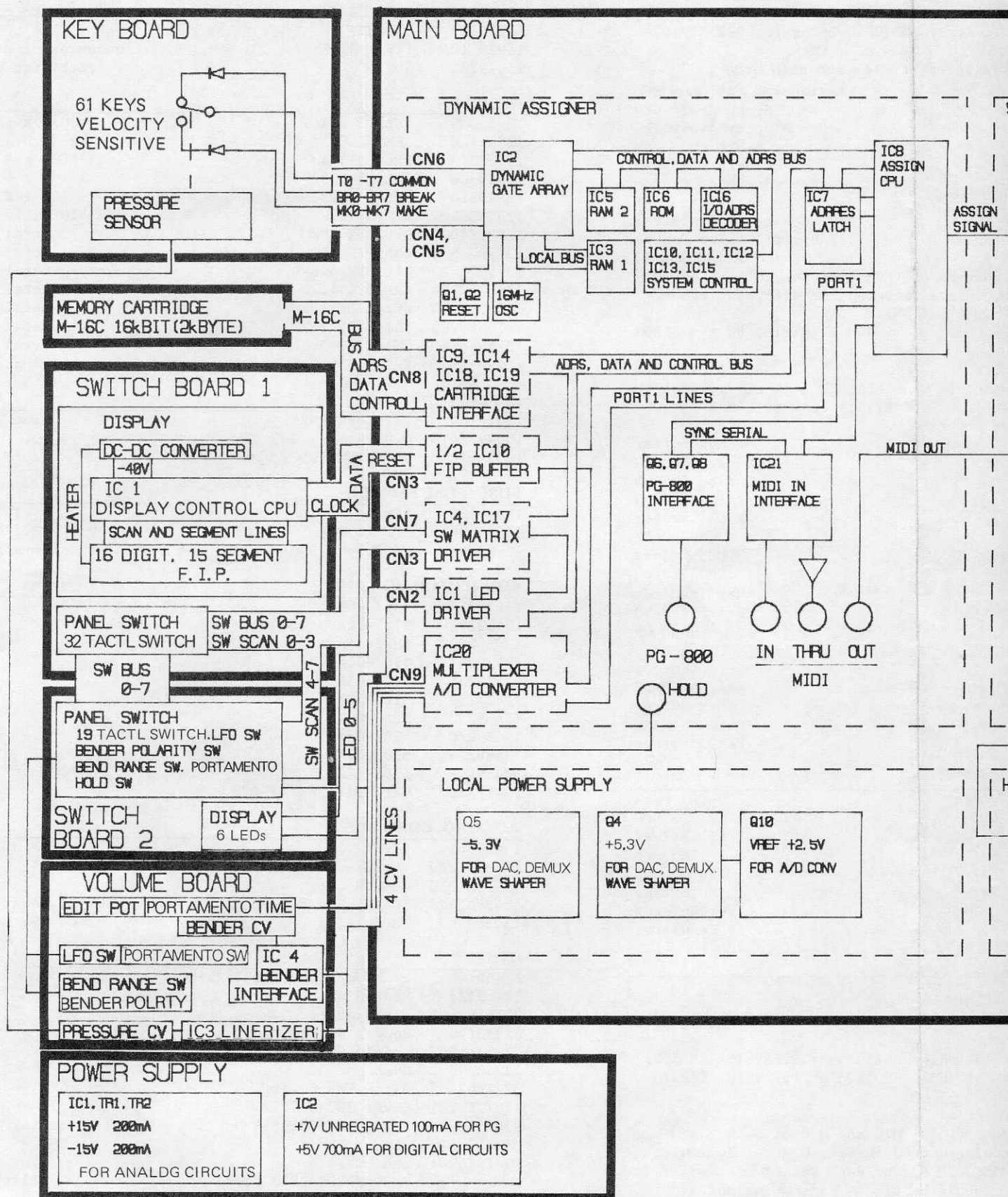
12369504 Cord Bushing SR-4N-4 100V

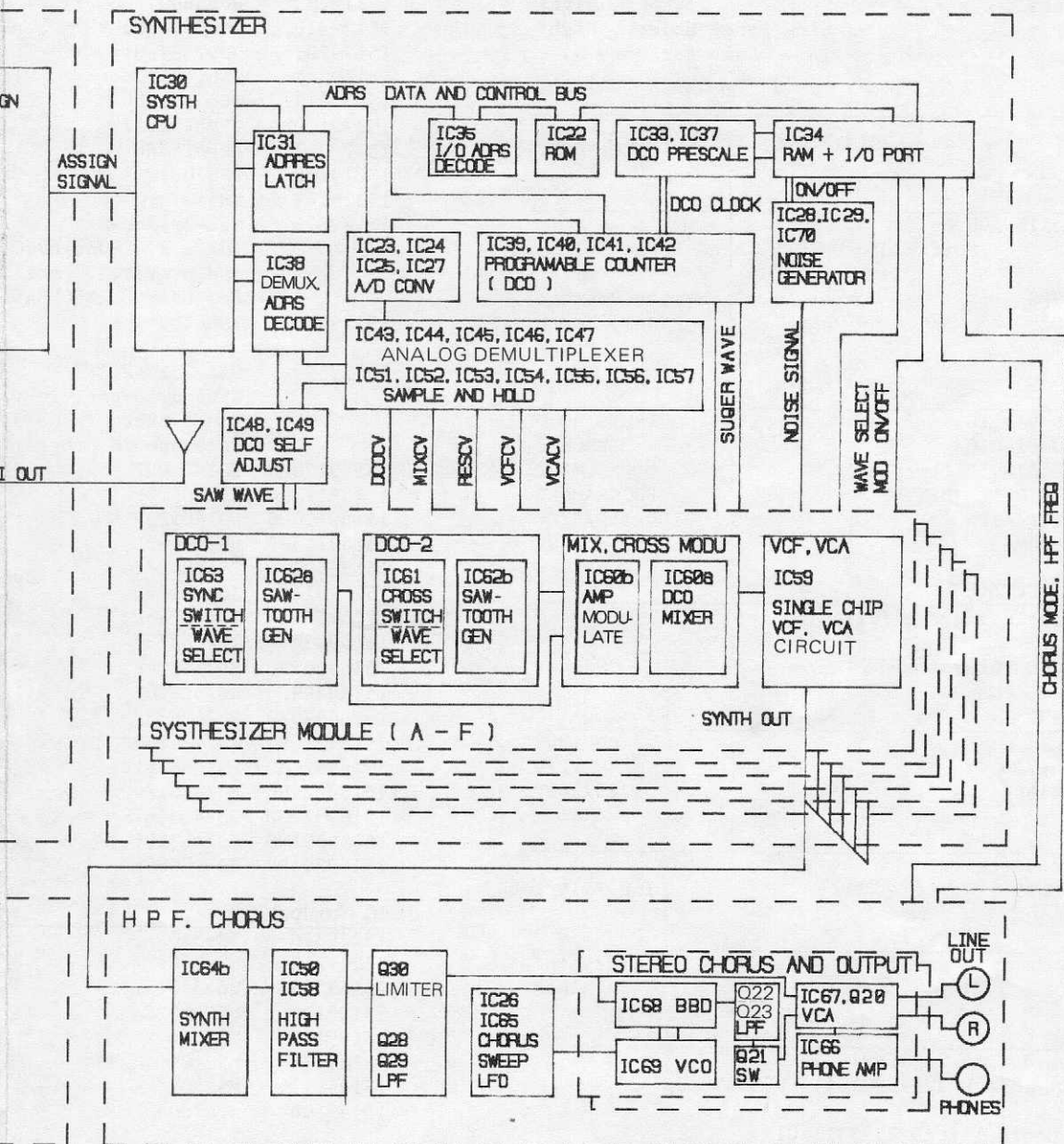
22193728 Cord Holder 100V

BLOCK DIAGRAM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U





CIRCUIT DESCRIPTION

The major circuits of the JX-8P on the Main Board are classified into two by their function: Assigner and Synthesizer, each has the dedicated CPU.

ASSIGNER

This section is further devided into two; Interface and Assigner. Interface deals with MIDI communication and reads information from the keyboard, panel controls, memory cartridge, programmer PG-800, etc. Assigner allocates each module (a pair of voices) to a key being played on the built in or MIDI keyboard.

SYNTHESIZER

This section contains 6 2-voice synthesizer modules and is very similar to those found on Roland JX-3P, MKS-30 and GR-700 in circuit configuration. As those circuits are repeated on Service Notes of those brother models, not covered in this Notes.

ADJUSTMENT

JX-8P is provided with built-in test program which mode.

ENTERING TEST MODE

1. While pressing TONE PIANO 2 and PIANO 3, switch
2. When the display has read [P1 PIANO 1], verify the light KEY MODE and AFTER TOUCH buttons one by one. Slightly half-lighting POLY. A full-lit button indicates assigned to a key as shown below.

SOLO	A	VOLUME
UNISON	B	BRILLIANCE
POLY	C	VIBRATO

CREATING THE TEST TONE

CAUTIONS: Allow at least five minutes for warm-up adjustment.
Do not use PG-800 in this mode.

1. Press EDIT PARAMETER. The display will read [11
2. Set the following parameters to the value respectively number and resetting EDIT knob. The parameter affect the procedure.

NUMBER	PARAMETER	VA
11	DCO 1 RANG	
12	DCO 1 WF	SC
13	DCO 1 TUNE	
14	DCO 1 LFO	
15	DCO 1 ENV	
41	MIX DCO 1	
42	MIX DCO 2	
43	MIX ENV	
52	VCF FREQ	
53	VCF RES	
54	VCF LFO	
55	VCF ENV	
56	VCF KEY	
61	VCA LEVEL	
62	VCA MODE	GA
64	CHORUS	C

ADJUSTING

1. Connect the scope to the OUTPUT jack or TP5 of the
2. Press A above middle C — 442Hz.
3. Adjust the trimmer of the module being indicated by the waveform shows its full amplitude.
4. In a similar way adjust the remaining modules but pre module.
5. When the adjustment has finished, return to the normal MASTER TUNE or switch the power off.

ADJUSTMENT

JX-8P is provided with built-in test program which runs only in the test mode.

ENTERING TEST MODE

1. While pressing TONE PIANO 2 and PIANO 3, switch the power ON.
2. When the display has read [P1 PIANO 1], verify that repeating a key will light KEY MODE and AFTER TOUCH buttons one by one while continuously half-lighting POLY. A full-lit button indicates the module currently assigned to a key as shown below.

SOLO	A	VOLUME	D
UNISON	B	BRILLIANCE	E
POLY	C	VIBRATO	F

CREATING THE TEST TONE

CAUTIONS: Allow at least five minutes for warm-up before proceeding to adjustment.
Do not use PG-800 in this mode.

1. Press EDIT PARAMETER. The display will read [11 DCO1 RANG 16'].
2. Set the following parameters to the value respectively by selecting a TONE number and resetting EDIT knob. The parameters not listed will not affect the procedure.

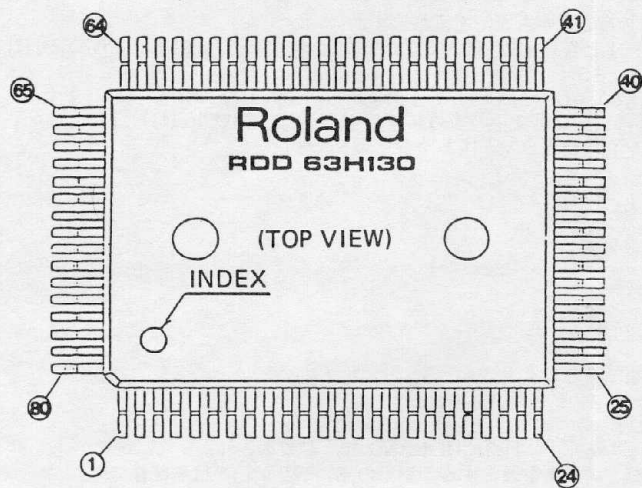
NUMBER	PARAMETER	VALUE
11	DCO 1 RANG	8'
12	DCO 1 WF	SQUR
13	DCO 1 TUNE	00
14	DCO 1 LFO	0
15	DCO 1 ENV	0
41	MIX DCO 1	99
42	MIX DCO 2	0
43	MIX ENV	0
52	VCF FREQ	54
53	VCF RES	99
54	VCF LFO	0
55	VCF ENV	0
56	VCF KEY	0
61	VCA LEVEL	70
62	VCA MODE	GATE
64	CHORUS	OFF

ADJUSTING

1. Connect the scope to the OUTPUT jack or TP5 of the MAIN BOARD.
2. Press A above middle C — 442Hz.
3. Adjust the trimmer of the module being indicated by the lit LED so that the waveform shows its full amplitude.
4. In a similar way adjust the remaining modules but press the A key for each module.
5. When the adjustment has finished, return to the normal mode by pressing MASTER TUNE or switch the power off.

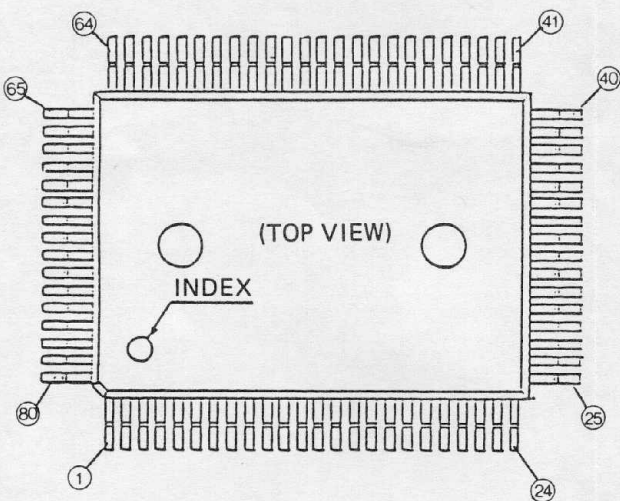
IC DATA

MB63H130 Pin Assignment



Pin no.	I/O	Pin name	Pin no.	I/O	Pin name	Pin no.	I/O	Pin name	Pin no.	I/O	Pin name
1	O	T7	21	I	BR9	41	I	CD7	61	O	RA1
2	I	BR0	22	I	MK9	42	I	CA8	62	O	RA10
3	I	MK0	23	I	BR10	43	I	CA9	63	O	RA2
4	I	BR1	24	I	MK10	44	I	CA10	64	I/O	ROE
5	I	MK1	25	I	RES	45	I	CS	65	O	RA3
6	I	BR2	26	I	E	46	I	XT1	66	O	RWE
7	I	MK2	27	O	EXCK	47	O	XT2	67	O	RA4
8	I	BR3	28	I	AS	48	O	ASEL	68	O	RA9
9	I	MK3	29	O	CRES	49	I	MOD1	69	O	RA5
10	I	BR4	30	I	CRNW	50	I	MOD2	70	O	RA8
11	I	MK4	31	O	SRCK	51	I/O	RD3	71	O	RA6
12	-	VSS	32	-	NC	52	-	VSS	72	O	RA7
13	I	BR5	33	-	VDD	53	I/O	RD4	73	-	VDD
14	I	MK5	34	I/O	CD0	54	I/O	RD2	74	O	T0
15	I	BR6	35	I/O	CD1	55	I/O	RD5	75	O	T1
16	I	MK6	36	I/O	CD2	56	I/O	RD1	76	O	T2
17	I	BR7	37	I/O	CD3	57	I/O	RD6	77	O	T3
18	I	MK7	38	I/O	CD4	58	I/O	RD0	78	O	T4
19	I	BR8	39	I/O	CD5	59	I/O	RD7	79	O	T5
20	I	MK8	40	I/O	CD6	60	O	RA0	80	O	T6

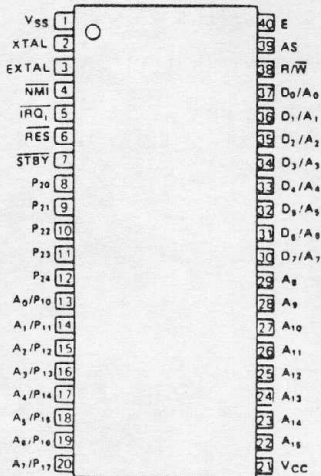
MB63H149 Pin Assignment



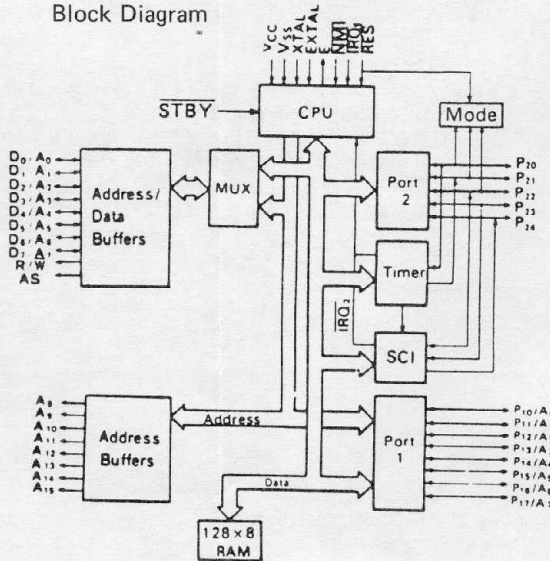
Pin no.	I/O	Pin name	Pin no.	I/O	Pin name	Pin no.	I/O	Pin name	Pin no.	I/O	Pin name
1	O	T7	21	I	BR9	41	I/O	CD7	61	O	RA1
2	I	BR0	22	I	MK9	42	I	CA8	62	O	RA10
3	I	MK0	23	I	BR10	43	I	CA9	63	O	RA2
4	I	BR1	24	I	MK10	44	I	CA10	64	I/O	ROE
5	I	MK1	25	I	RES	45	I	CS	65	O	RA3
6	I	BR2	26	I/O	EXCK	46	I	XT1	66	O	RWE
7	I	MK2	27	I	E	47	O	XT2	67	O	RA4
8	I	BR3	28	O	INT	48	O	ASEL	68	O	RA9
9	I	MK3	29	I	AS	49	I	MOD1	69	O	RA5
10	I	BR4	30	O	CRES	50	I	MOD2	70	O	RA8
11	I	MK4	31	I	CRNW	51	I/O	RD3	71	O	RA6
12	-	VSS	32	O	SRCK	52	-	VSS	72	O	RA7
13	I	BR5	33	-	VDD	53	I/O	RD4	73	-	VDD
14	I	MK5	34	I/O	CD0	54	I/O	RD2	74	O	T0
15	I	BR6	35	I/O	CD1	55	I/O	RD5	75	O	T1
16	I	MK6	36	I/O	CD2	56	I/O	RD1	76	O	T2
17	I	BR7	37	I/O	CD3	57	I/O	RD6	77	O	T3
18	I	MK7	38	I/O	CD4	58	I/O	RD0	78	O	T4
19	I	BR8	39	I/O	CD5	59	I/O	RD7	79	O	T5
20	I	MK8	40	I/O	CD6	60	O	RA0	80	O	T6

HD63B03RP

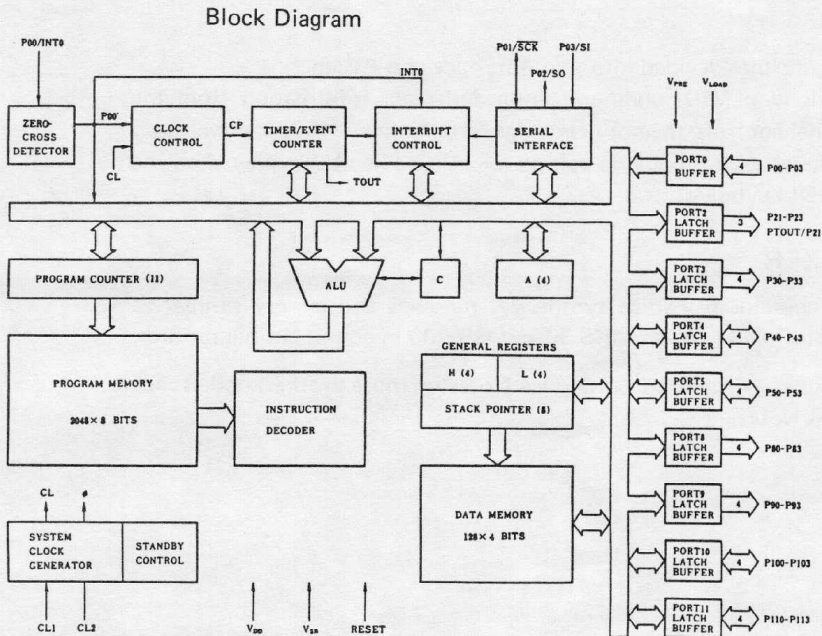
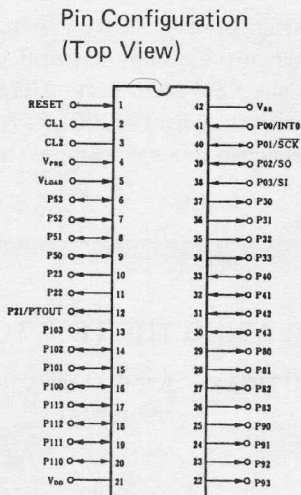
Pin Configuration (Top View)



Block Diagram

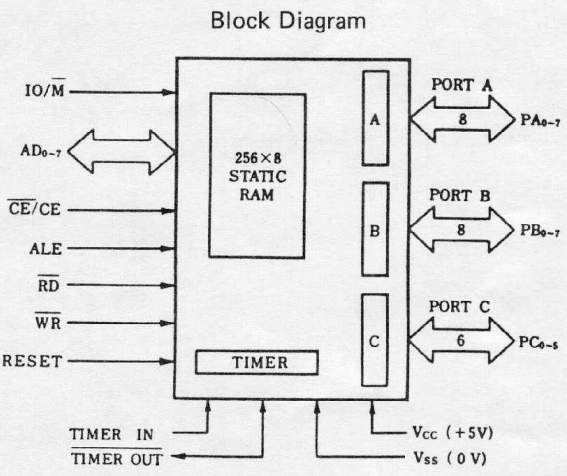
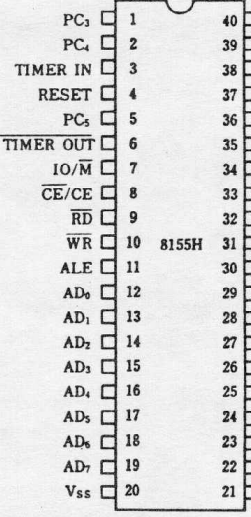


μPD7537C



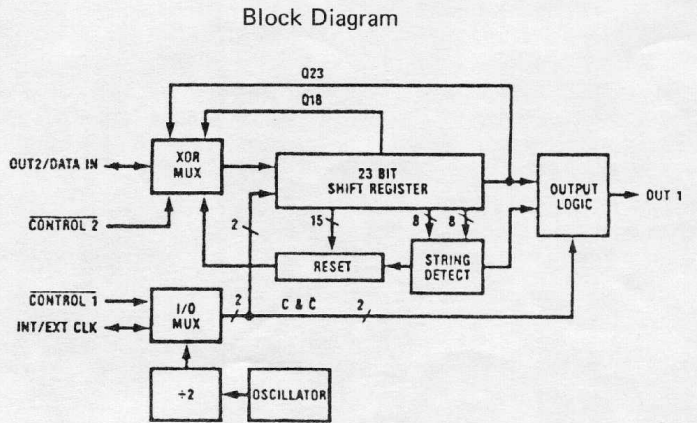
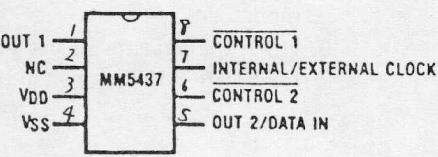
μPD8155HC

Pin Configuration (Top View)



MM5437

Pin Configuration (Top View)

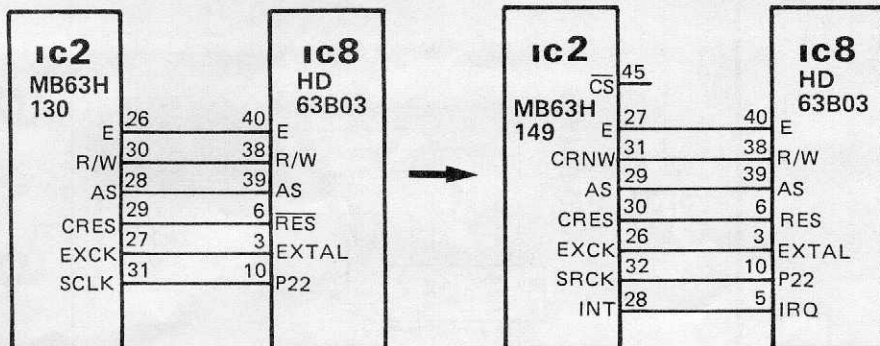


CHANGE INFORMATION

Since the release of the JX-8P some engineering changes have been made to improve the performance and reliability of the unit.

EFFECTIVE SN 実施製番	DESCRIPTION	変更内容 (理由)	M. AS
480300		<p>CPUに比べROM A (IC6) の動作速度が遅く、プログラムの暴走が起り易い。現象としてはディスプレイ無表示、あるいは不鳴りがある。工場対策を上図に示すが、高速のROM M5L2718K-2を使用すればハード上での変更の必要は無い。従ってサービス面での対策にはM5L27128KをM5L2718K-2に交換するだけで良い。</p>	761 pcb
480420	<p>Pressing HOLD Pedal while After Touch is On also holds A.T. effect via MIDI message on a downstream synthesizer. The effect continues on the subsequent notes even they are played after the release of the pedal. ROM A of Ver. 2.0 cures this problem.</p>	<p>アフター・タッチON時にHOLDペダルを踏むと、下流へのMIDIキー信号に対するアフター・タッチ効果は、ペダルを離れた後でも解除されない。ROM A Ver.2.0を使用すればこの現象は生じない。</p>	
480589	<p>The software in PROM A of Ver. 2.1 allows the modules to increase the total volume of the voice outputs. Also the software recognizes MIDI Program Change message after receipt of MIDI Local OFF message.</p>	<p>ROM A Ver.2.1を使用すれば音量が増加する。また、MIDI ローカルOFFメッセージ受信後もプログラム・チェンジ・メッセージの受信が可能となる。</p>	
490600		<p>This change conforms to the requirement placed by some specification. Counterparts in both original and revised circuits are interchangeable if R28-R31 are so arranged to the diagram.</p> <p>安全規格に適合させるため。 左図のトランジスタを右図のものと置換える場合には、R28-R31の定数変更も同時に行なう必要がある。</p>	
528250	<p>Attempt to write into Preset Bank results in error message displayed as "SELECT BANK C I". However, this message would not be displayed if WRITE button is pressed while Preset B [-P . . .] Bank is selected. PROM A ver. 2.2 cures this problem.</p>	<p>プリセット・バンクへ書き込みを行なおうとすると、エラーメッセージ「SELECT BANK C I」が表示されるが、プリセットがBバンクの場合表示されない。ROM A Ver.2.2を使用すれば、エラーメッセージが正しく表示される。</p>	
530350		<p>Gate Array is changed to the newly designed one. To provide electric connections between the new</p>	

530350



VREF circuit is modified to have adjustable positive voltage (+5.6V).

基準電圧回路を調整可能型 (基準電圧5.6V) に変更。

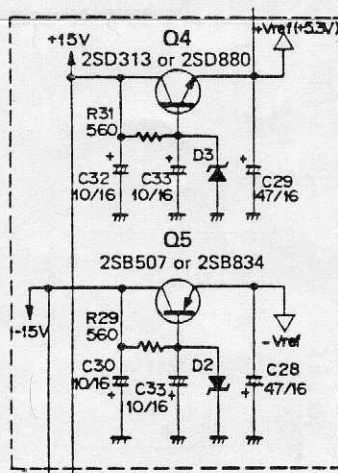
542750

VREF circuit is returned back to the previous configuration with some mounting holes for trimmer, transistor, etc. made idle.

NOTE: VREF differs between fixed and adjustable ones since their temperature coefficients are of opposite direction.

固定式でも十分な電圧精度が保たれることが立証されたので再び前の回路へ変更。

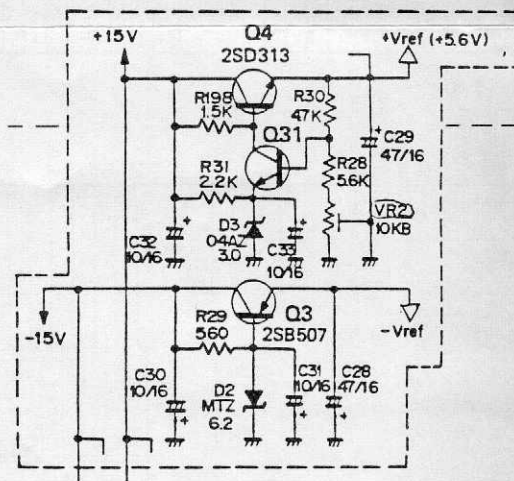
注: 固定型と調整型とでは回路の温度係数が異なるため基準電圧も異なる。



Gate Array is changed to the newly designed one. To provide electric connections between the new gate and the peripherals (see block diagram), some conductor patterns are re-laid out on the new PCB. Software in ROM A is also revised to meet the new function.

CAUTION: ROM A of Ver. 3.0 will not work with the old GATE Array, making itself incompatible with ones of Ver. 2.2 and below.

性能向上のためゲート・アレイIC6を新設計のものに変更、これに伴ないROM Aのプログラム変更。図に示すごとくIC2とIC8間の接続が一部異なるため基板のレイアウトも変更。
注: 基板完成品としては新旧間に互換性がある。



543050

ROM B of EPROM is replaced by a cost effective mask ROM.

ROM BをEP ROMからMASK ROMに変更、但し、プログラムの内容は変わらない。

554250

Pressing HOLD Pedal ON and OFF with AFTER TOUCH ON while depressing any key on the JX-8P keyboard sometimes generate

90 40 51 DO 80 DO 7F BO 40 7F (7F) BO 40 00
KEY ON AFTER TOUCH HOLD ON DO FF HOLD OFF

Must always be 7F, but varies with AFTER TOUCH knob Key Pressure. FF = System Reset; this will be generated when the amount of AFTER TOUCH and Key pressure are

ROM A of Ver. 3.1 cures this problem.

NOTE: ROM A's of Vers. 2.0 to 2.2, being incompatible with ROM A of Ver. 3.1, are to be replaced with Ver. 2.3.

SWITCH FILM SHEET

Changed to 22663115. Sound Names on TONE SELECTOR buttons are deleted. スイッチ・フィルムシートのトーン・セレクトボタンから音色名を削除す

MUSIC REST And TOP PANEL

Music Rest is furnished on later products. Effective Serial Number is not fixed on the day of the issue.

譜面立てを追加する。実施製番は本サービスノート発行時点では未定。



Interchangeable
互換性有














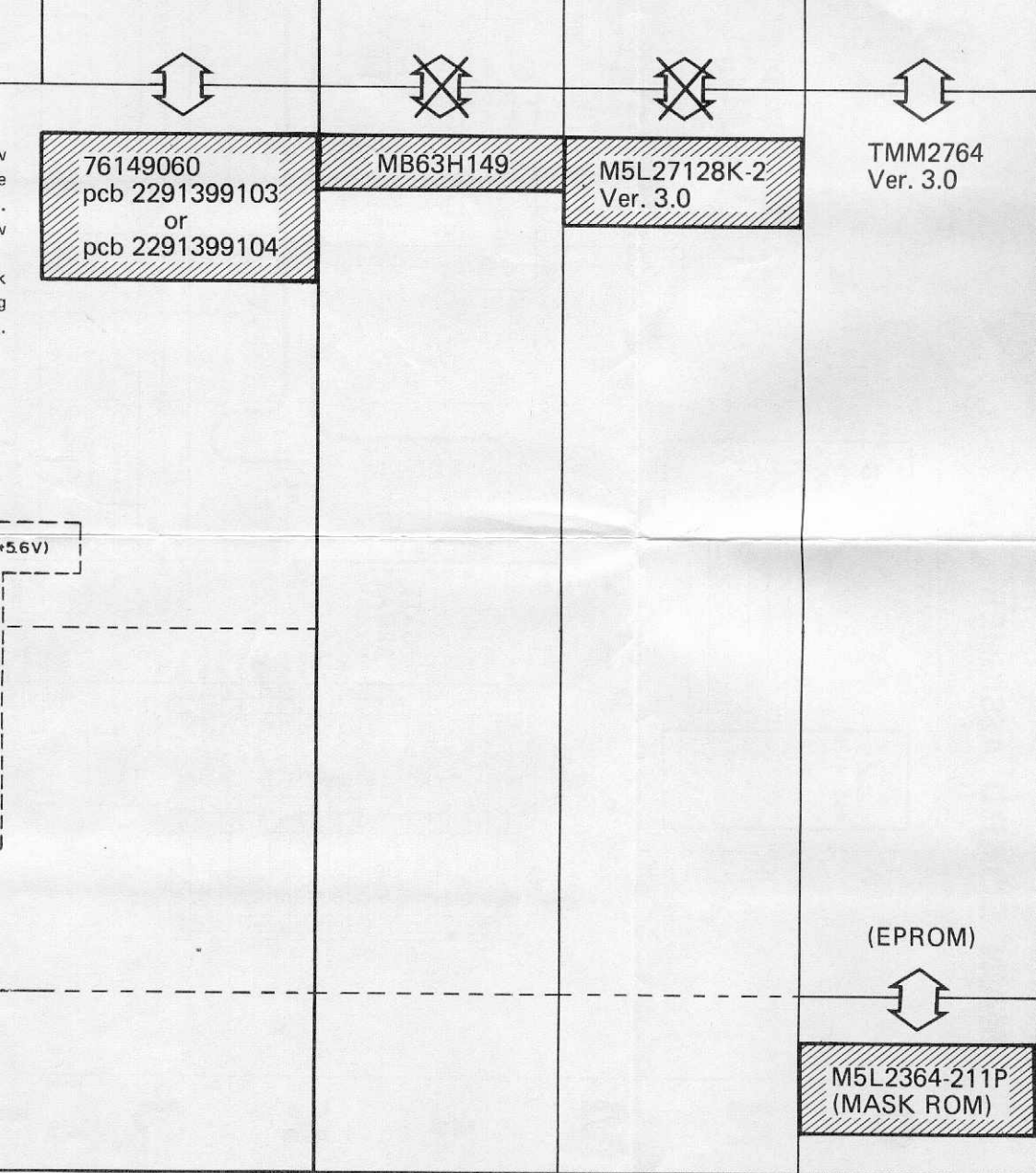
Substitutive
矢印方向にのみ
代用可能




Incompatible
互換性無

MAY. 1985

MAIN BOARD ASSEMBLY	GATE ARRAY IC2 MAIN BOARD	ROM A IC6 MAIN BOARD	ROM B IC22 MAIN BOARD
76149060 pcb 2291399102	MB63H130	M5L27128K Ver. 1.1	TMM2764 Ver. 1.1 Although the software in ROM B remains unchanged, its revision number is updated in pace with that of ROM A to avoid confusion around version number. 本表中のROM Bはバージョ ンNo.にかかわらず、全てプロ グラムは同じ。しかし混乱を 避けるためROM Aの変更 に合わせてバージョンNo.は更 新されている。
		 M5L27128K Ver. 2.0	 TMM2764 Ver. 2.0
		 M5L27128K Ver. 2.1	 TMM2764 Ver. 2.1
		 SN514700 M5L27128K-2	
		 M5L27128K-2 Ver. 2.2	 TMM2764 Ver. 2.2
			 TMM2764 Ver. 3.0
76149060 pcb 2291399102	MB63H149	M5L27128K-2	



times generates incorrect MIDI OUT message upon HOLD pedal  OFF as exemplified below.

UCH knob setting and
generated
ssure are at maximum.

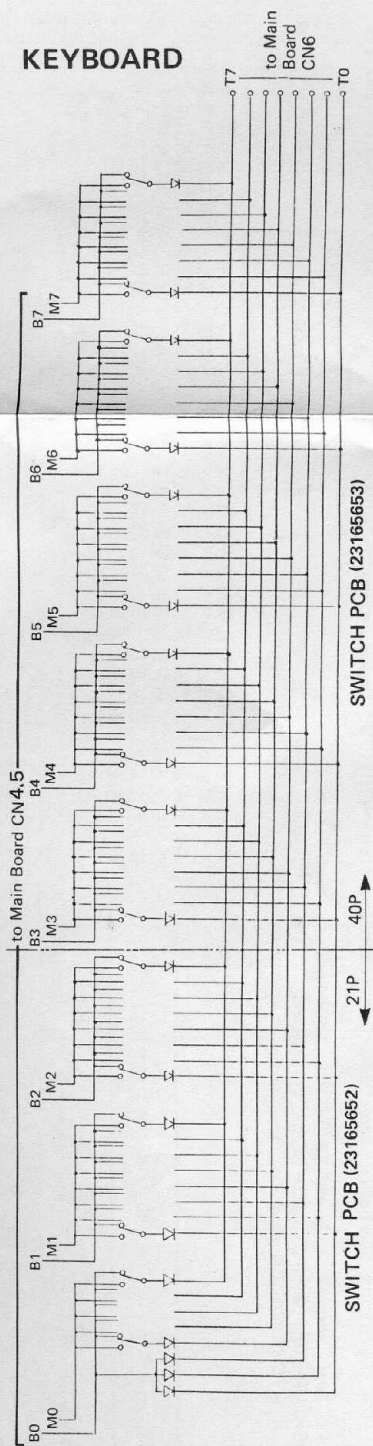
M5L27128K-2
Ver. 3.1

アフター・タッチON時に鍵盤を押し続けながら、HOLDペダルをON、OFFさせると、ペダルOFF時に7Fであるべきデータが、上に示す様に異なった値で送り出される場合があります。このデータ値は、アフター・タッチボリュームの位置、および押鍵圧によって異なる。上例は、両方共が最大の場合である。ROM A VER. 3.1に交換すれば解決する。但し、VER. 2.2 以前の ROM A は互換性が無いので、VER. 2.3を使用すること。

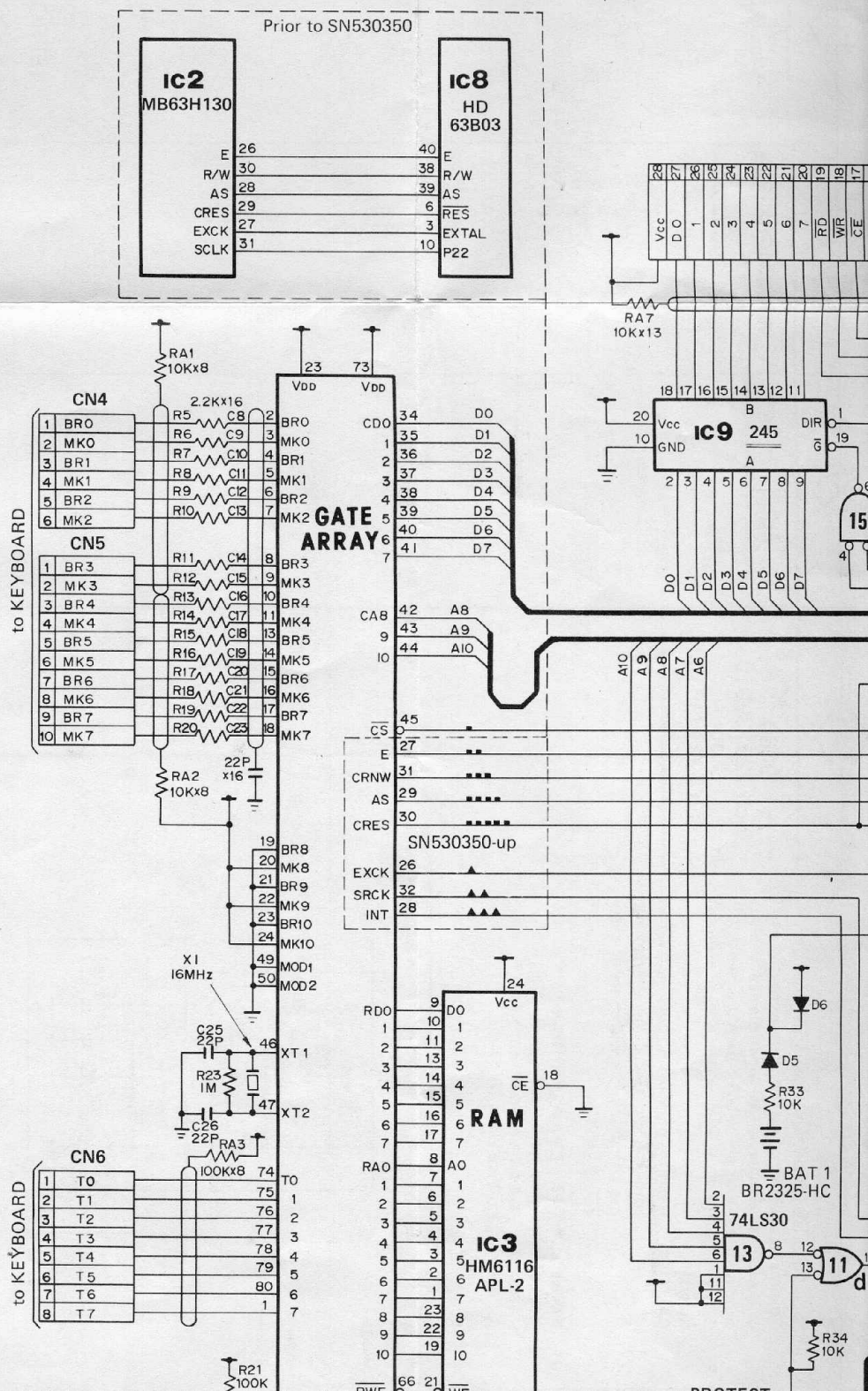
色名を削除する。

は未定。

**COMPONENTS LOCATED ON
SCHEMATIC DIAGRAM
(ASSIGNER)**



O
N
M
L
K
J
I
H
G
F

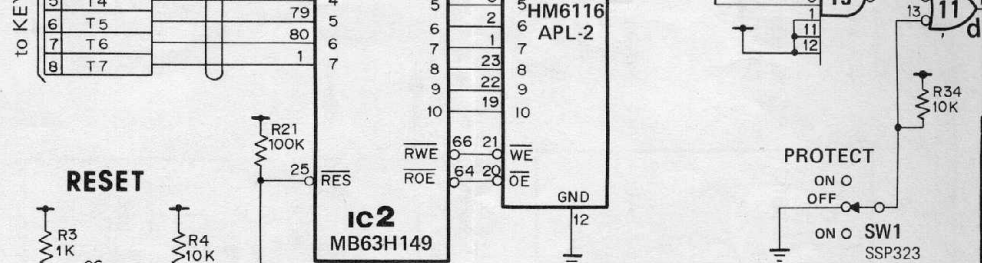


COMPONENTS LOCATED ON SCHEMATIC DIAGRAM (ASSIGNER)

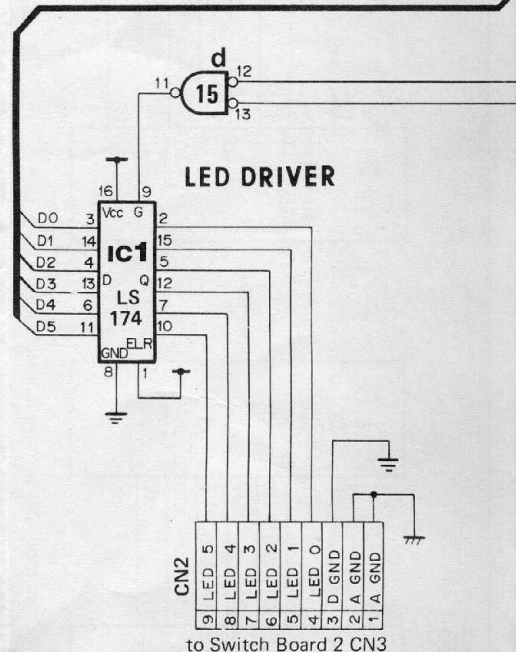
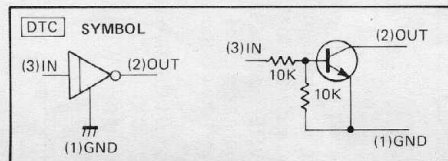
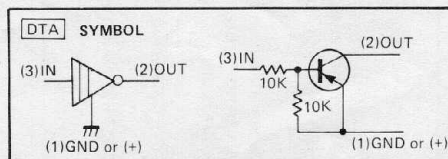
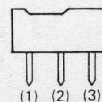
For the Q's and IC's not listed here, see table on P.11.

IC		Q	
CIRCUIT NO.	SCHEM LOCATION	CIRCUIT NO.	SCHEM LOCATION
1	C-5	1	D-2
2	E-3	2	D-3
3	G-5	3	C-11
4	L-13	4	E-8
5	I-10		D-11
6	I-12		E-14
7	J-15	5	L-18
8	H-17	6	K-18
9	L-6	7	K-18
10a	H-12	8	J-18
10b	I-13	10	F-13
10c	H-18	31	D-11
10d	H-18	VR	
10e	I-18	2	C-12
11a	H-9	SW	
11b	H-10	1	E-7
11c	H-9		
11d	F-7		
12	H-13		
13	G-6		
14	L-8		
15a	L-13		
15b	L-7		
15c	L-18		
15d	D-5		
16	J-14		
17	L-15		
18	L-10		
19	L-12		
20	C-16		
21	N-18		

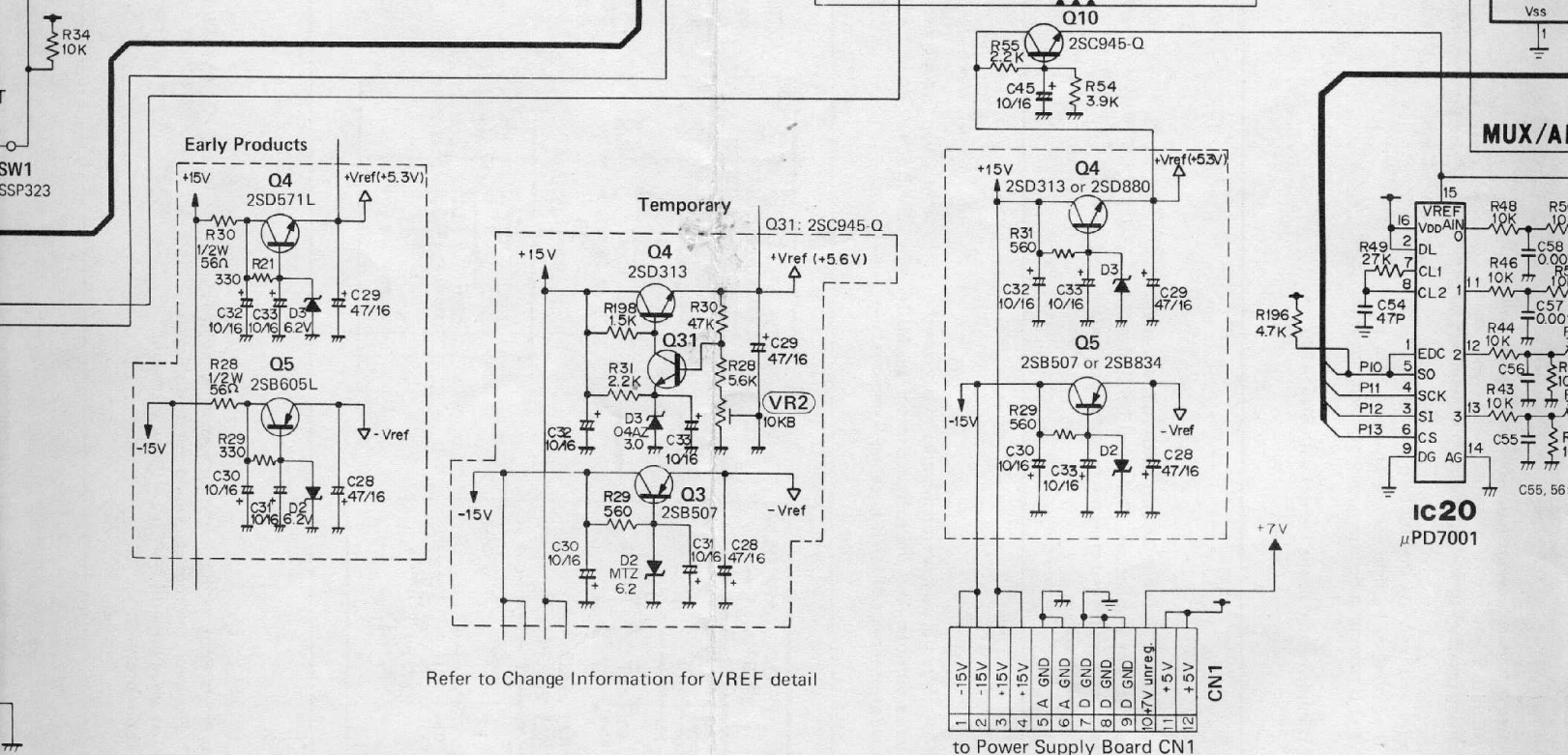
F
E
D
C
B
A

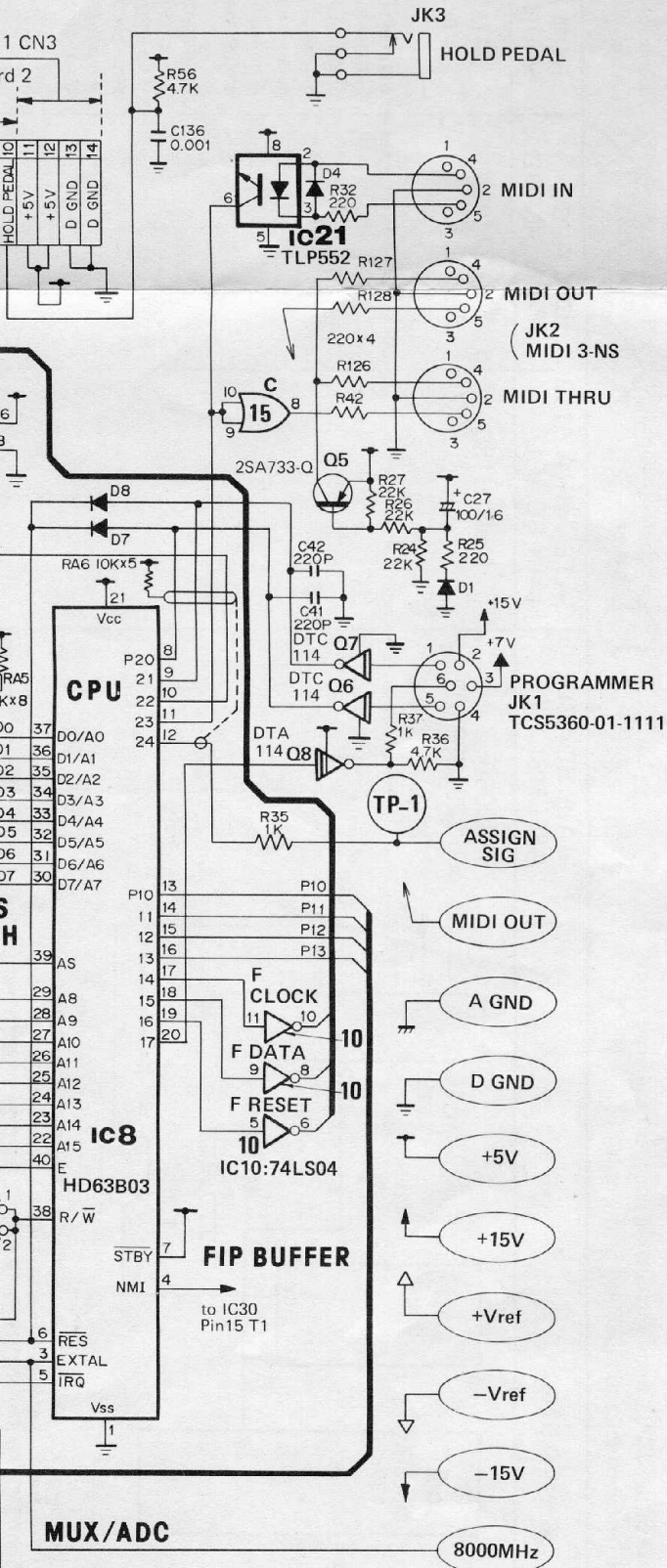


DTA114 / DTC114



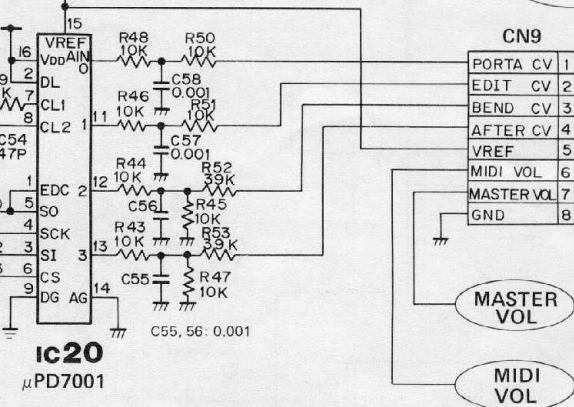
1 2 3 4 5 6 7





MUX/ADC

8000MHz



16

17

18

19

MAIN BOARD (PARTIAL)

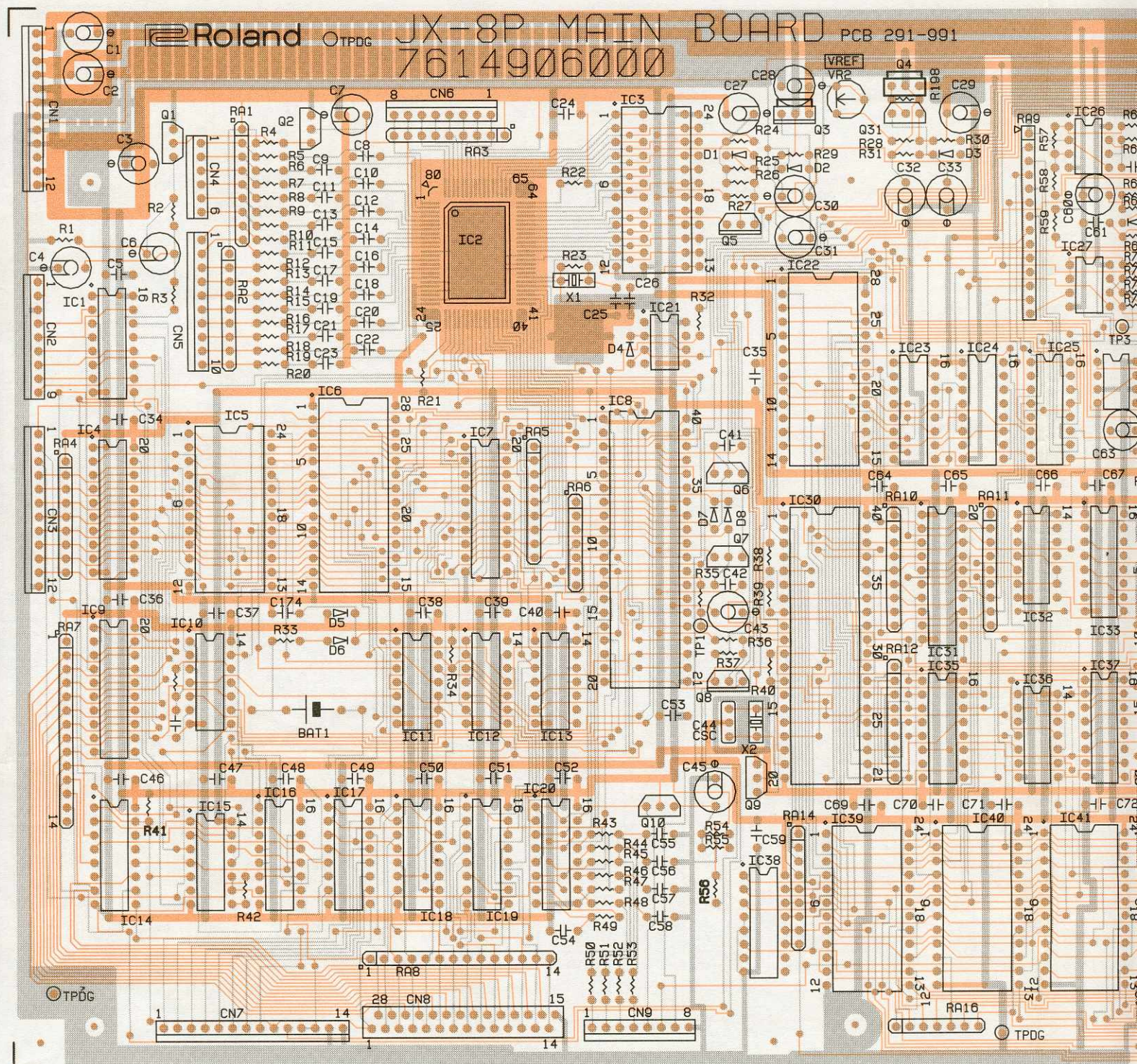
76149060

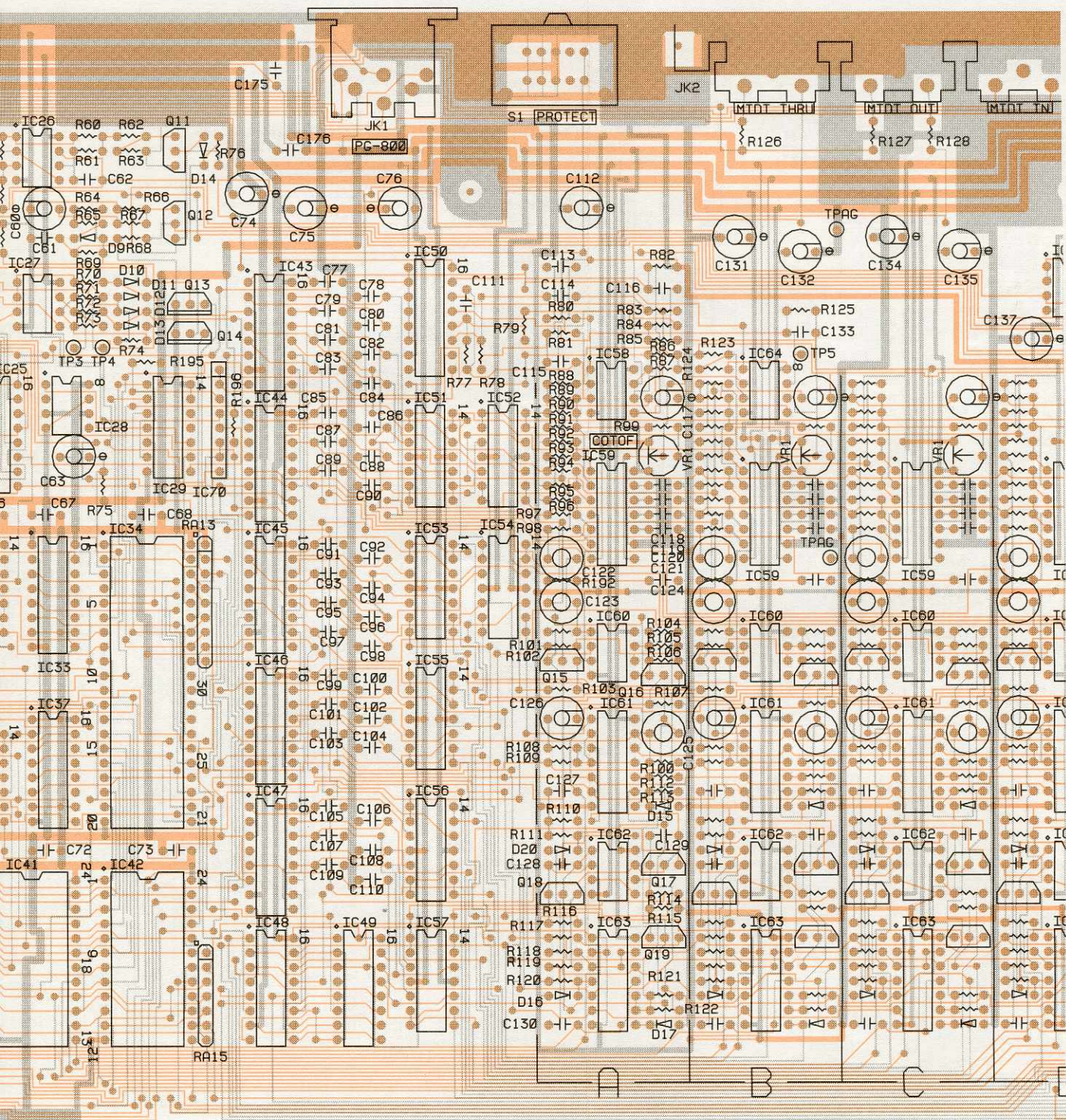
(pcb 2291399102) or

(pcb 2291399104) SN530350-up

LAYOUT 2291399104

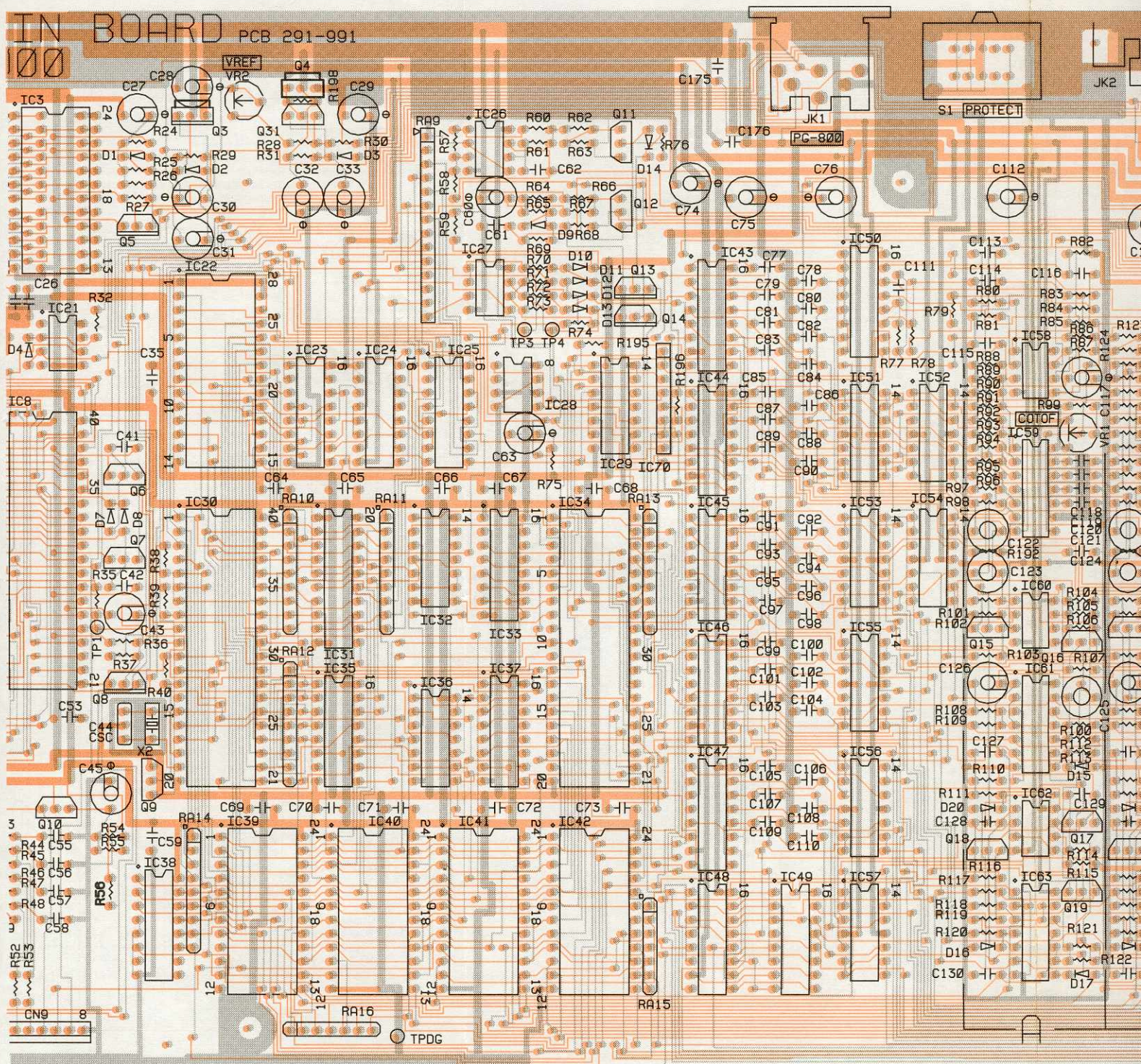
For checking paths to Gate Array of MB63H130 or 22913102, trace tracks on the actual PCB referring boxed diagrams on page 8.

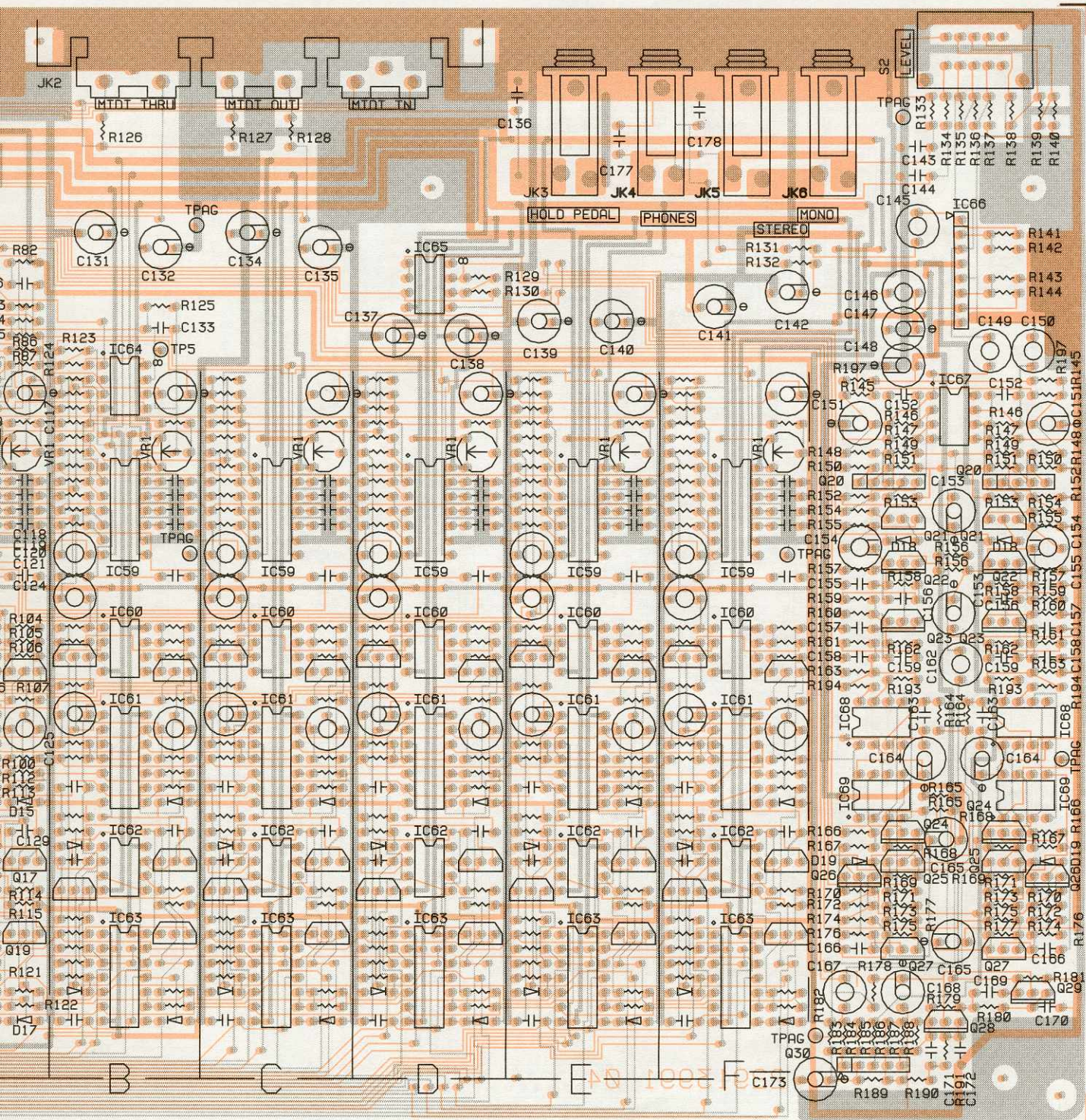


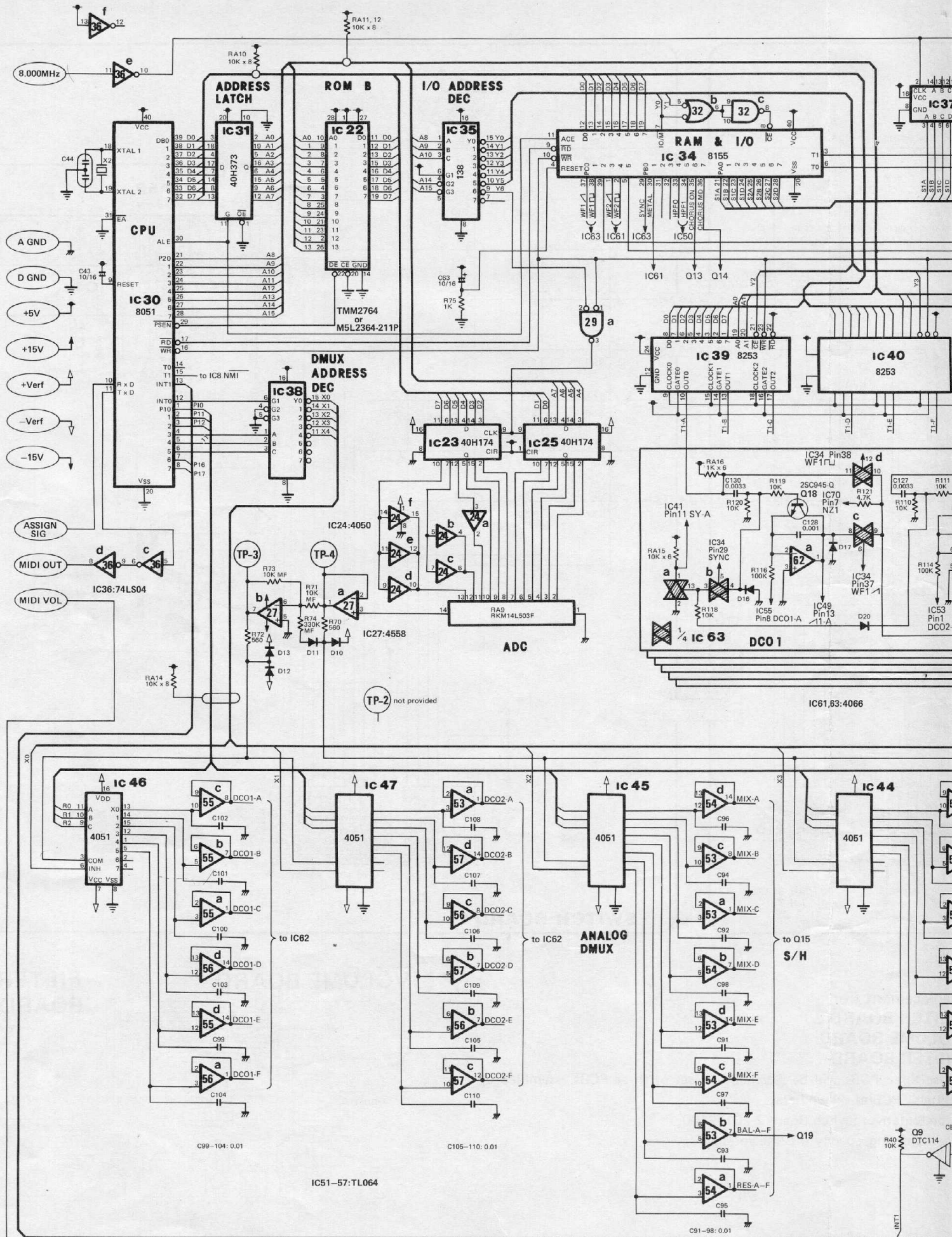


(pcb 2291399102) or
(pcb 2291399104) SN530350-up

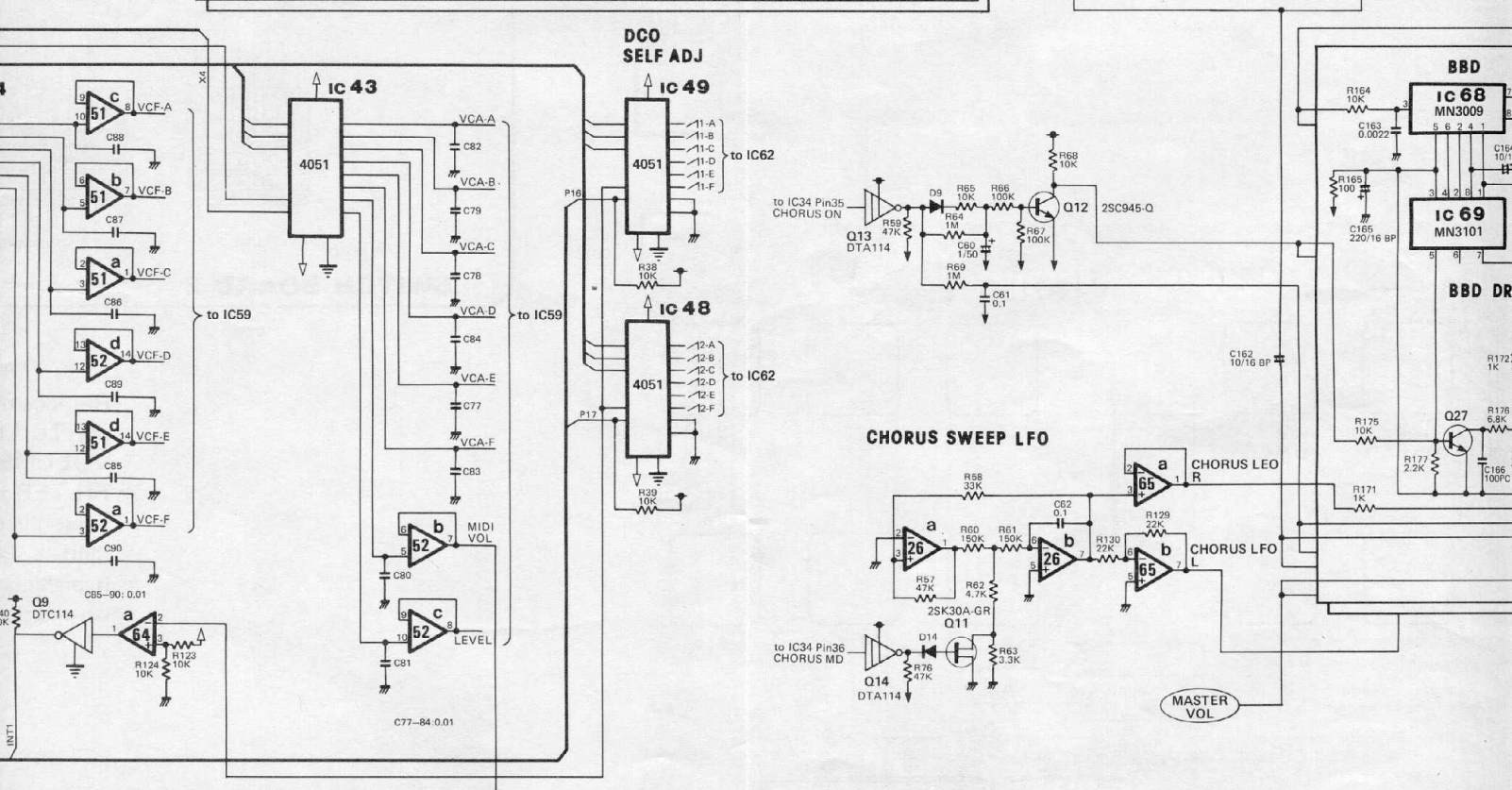
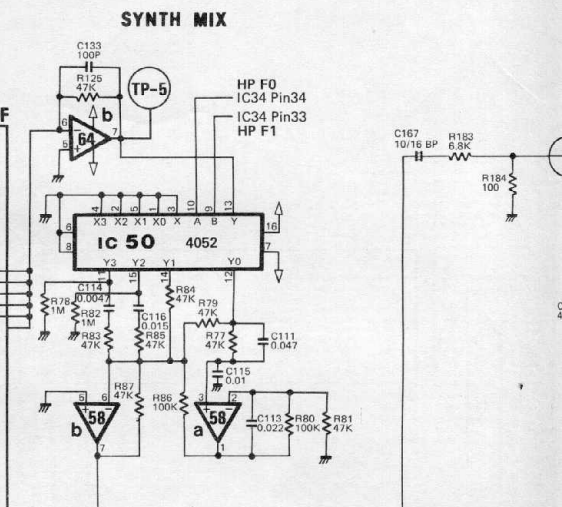
IN BOARD PCB 291-991



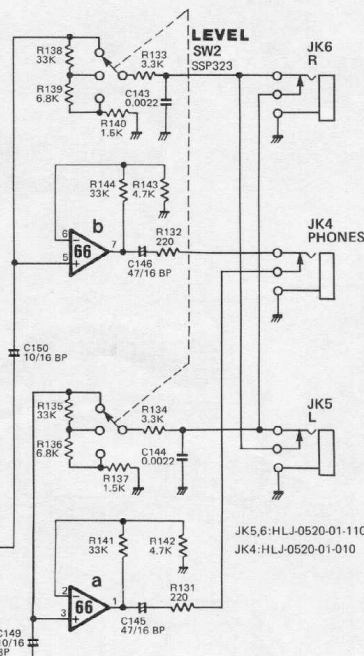
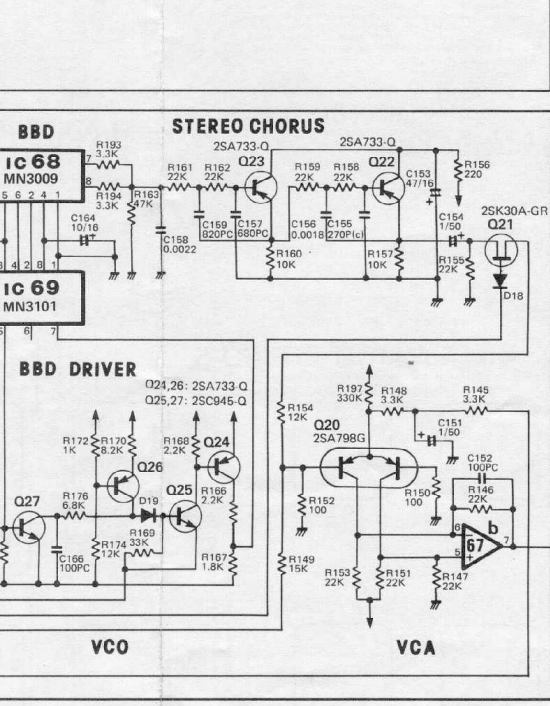
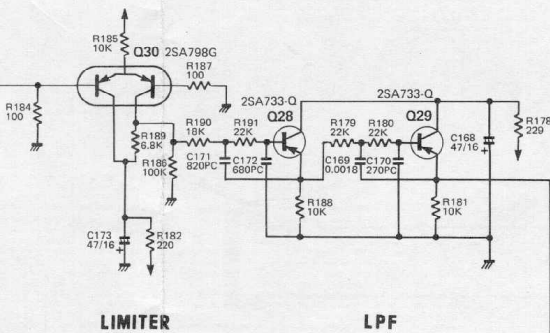




IC					
CIRCUIT NO.	SCHEM LOCATION	CIRCUIT NO.	SCHEM LOCATION	CIRCUIT NO.	SCHEM LOCATION
22	P-6	32b	Q-11	46	G-3
23	L-7	32c	Q-11	47	G-6
24a	K-8	32d	not used	48	E-20
24b	K-7	33	Q-16	49	G-20
24c	J-7	34	P-11	50	J-24
24d	J-7	35	P-8	51a	E-14
24e	J-7	36a	Q-15	51b	F-14
24f	K-7	36b	Q-17	51c	G-14
25	L-9	36c	J-3	51d	D-14
26a	C-22	36d	J-3	52a	C-14
26b	C-23	36e	Q-3	52b	C-17
27a	J-6	36f	not used	52c	B-17
27b	J-5	37	Q-14	52d	E-14
28	Q-18	38	M-5	53a	E-11
29a	not used	39	M-11	53b	B-11
29b	O-20	40	M-14	53c	F-11
29c	O-19	41	M-16	53d	D-11
29d	O-20	42	M-18	54a	B-11
30	N-3	43	G-17	54b	E-11
31	P-4	44	G-13	54c	C-11
32a	P-17	45	G-10	54d	G-11



					Q		VR	
SCHEM LOCATION	CIRCUIT NO.	SCHEM LOCATION	CIRCUIT NO.	SCHEM LOCATION	CIRCUIT NO.	SCHEM LOCATION	CIRCUIT NO.	SCHEM LOCATION
-3	55a	E-4	62a	J-12	9	B-14	1	J-19
-6	55b	F-4	62b	J-15	11	B-23	2	H-33 E-33
-20	55c	G-4	63a	J-10	12	F-23		
-20	55d	D-4	63b	J-11	13	F-22		
-24	56a	C-4	63c	K-13	14	B-22		
-14	56b	D-7	63d	L-13	15	K-19		
-14	56c	E-7	64a	B-15	16	J-17		
-14	56d	E-4	64b	K-23	17	K-15		
-14	57a	G-7	65a	D-24	18	K-12		
-14	57b	E-7	65b	C-24	19	J-18		
-17	57c	C-7	66a	D-33	20	E-30		
-17	57d	F-7	66b	G-33	21	F-31		
-14	58a	I-25	67b	D-31	22	G-30		
-11	58b	I-24	68	G-27	23	G-29		
-11	59	K-21	69	F-27	24	E-29		
-11	60a	K-19	70a	M-20	25	D-29		
-11	60b	J-17	70b	M-20	26	D-28		
-11	61a	L-15			27	D-27		
-11	61b	K-15			28	K-29		
-11	61c	I-17			29	K-31		
-11	61d	K-16			30	K-28		



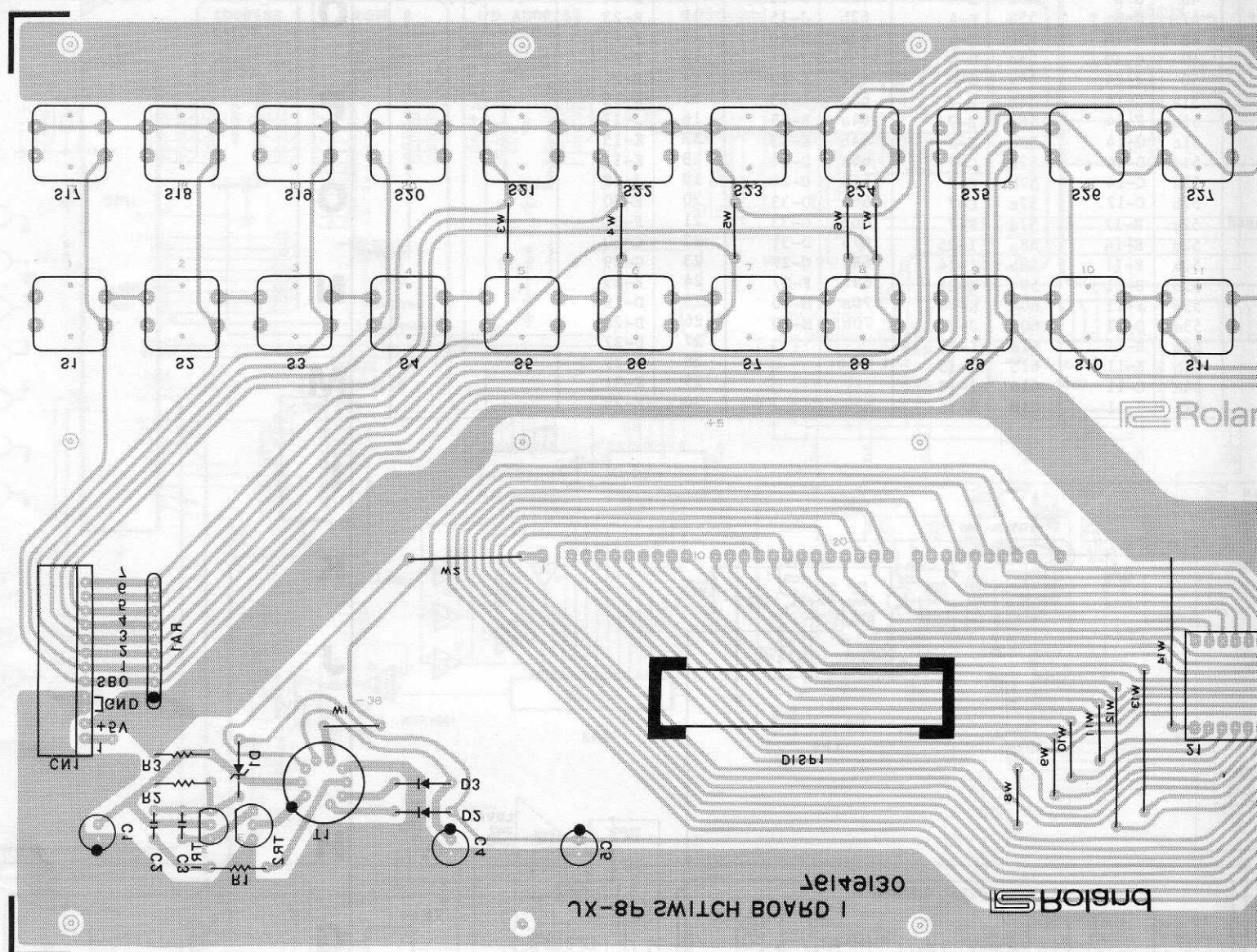
All diodes not specified are 1SS-133.

MAIN BOARD SYNTHESIZER

R
Q
P
O
N
M
L
K
J
I
H
G
F
E
D
C
B
A

SWITCH BOARD 1 76149130 (pcb 2292311401)

SWITCH BOARD 1 76149130 (pcb 2292311401)

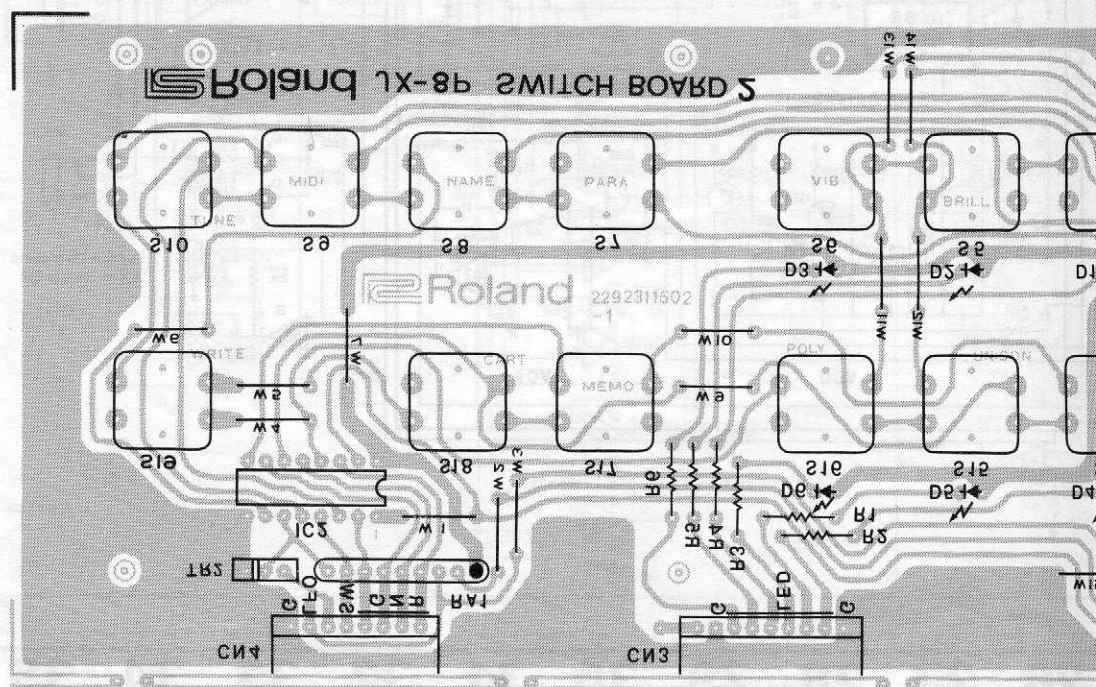


SWITCH BOARD 2

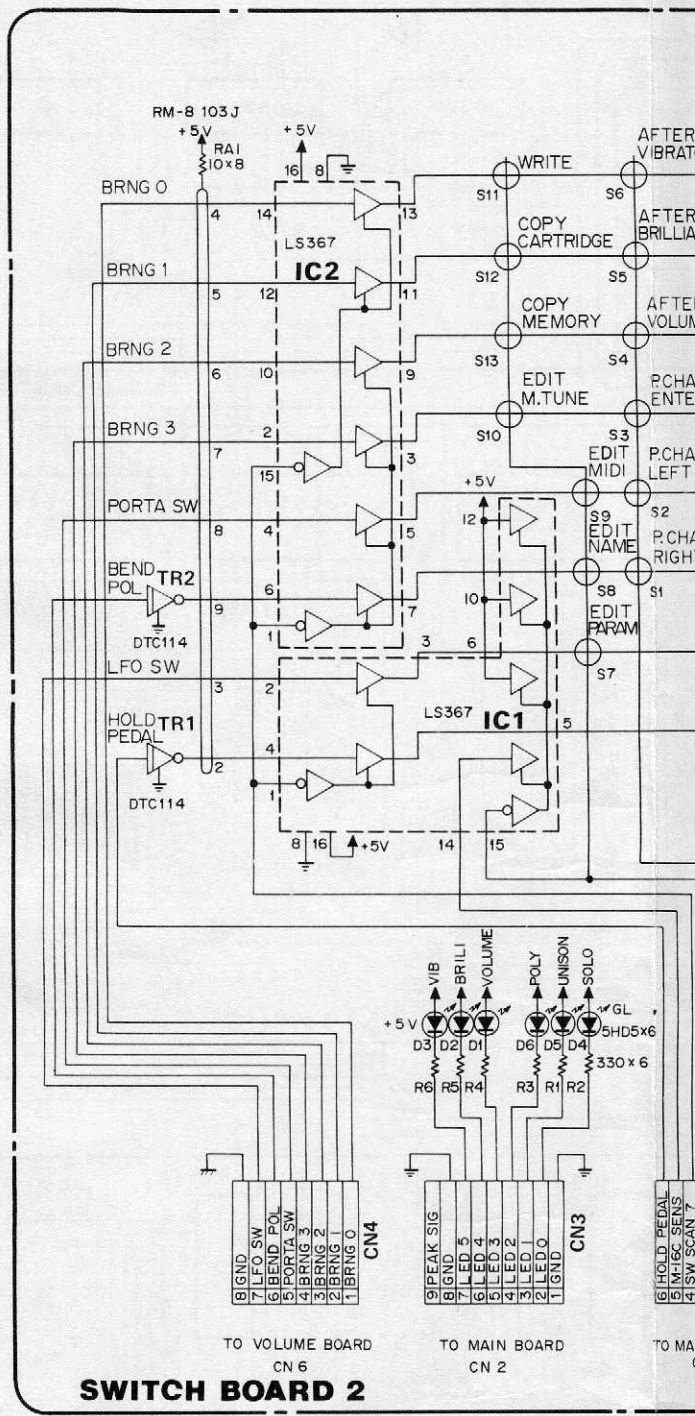
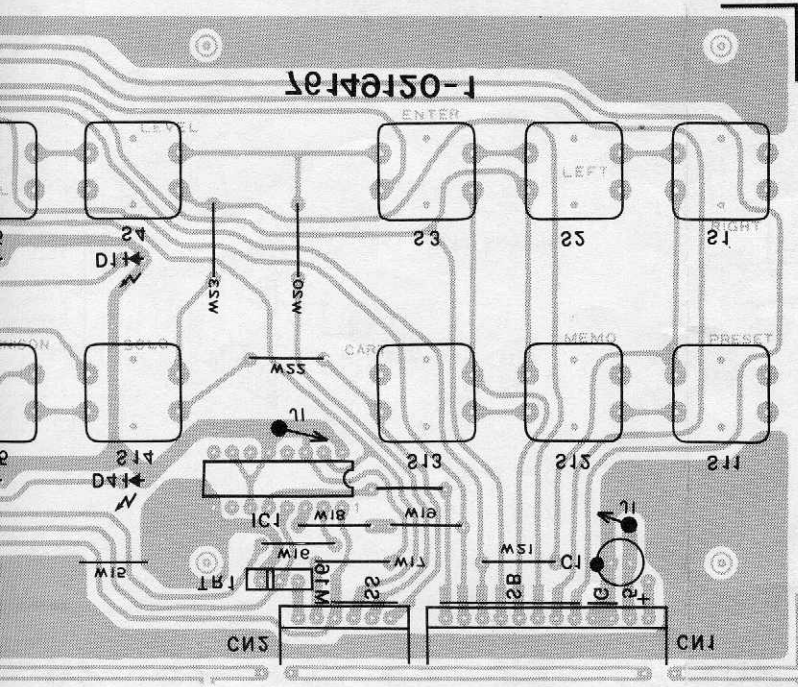
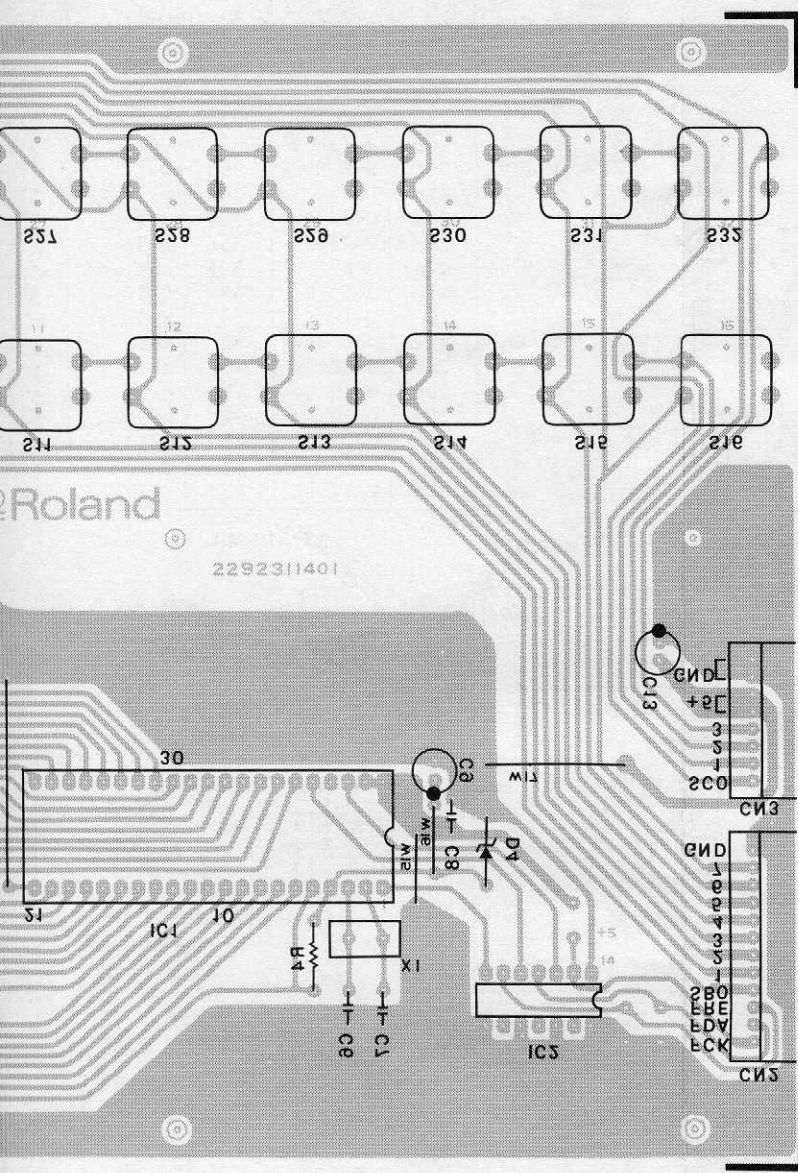
76149120-1

(pcb 2292311502-1)

Replacement for Switch Board will be in a set of Switch Board 2, Volume Board and Filter Board.



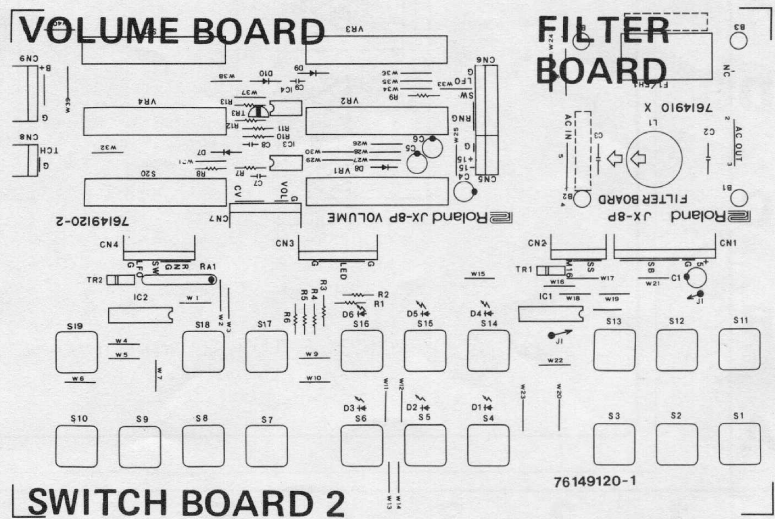
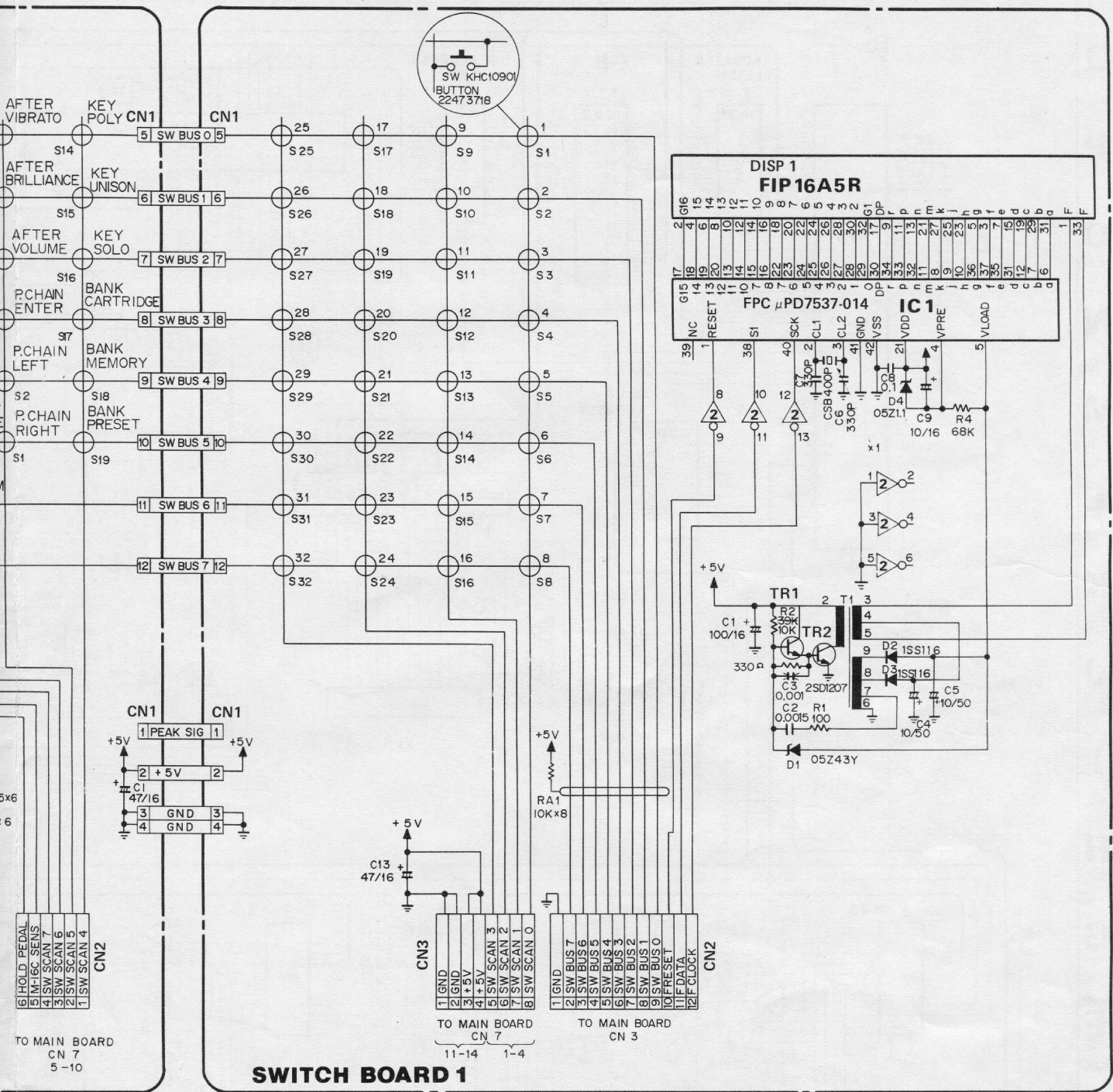
View from foil side



SWITCH BOARD 2

**Replacement For
SWITCH BOARD 2
VOLUME BOARD
FILTER BOARD**

These three PCBs will be
splittable PCB as shown in
Representative: Switch Board
When ordering, specify the



VOLUME BOARD

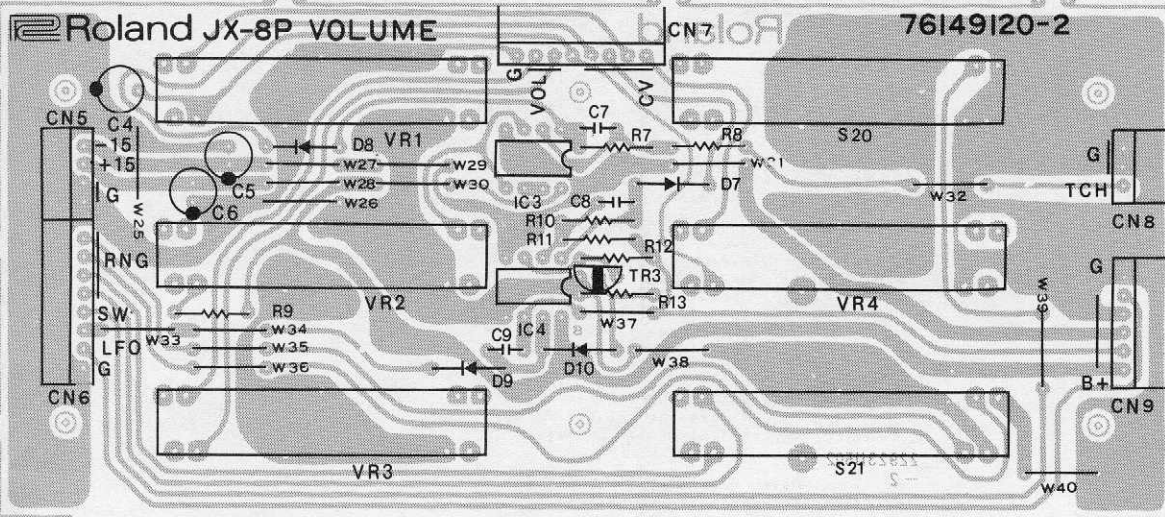
76149120-2

(pcb 2292311502-2)

Replacement for Volume Board will be supplied in the splittable PCB set of Volume Board, Switch Board 2 and Filter Board.

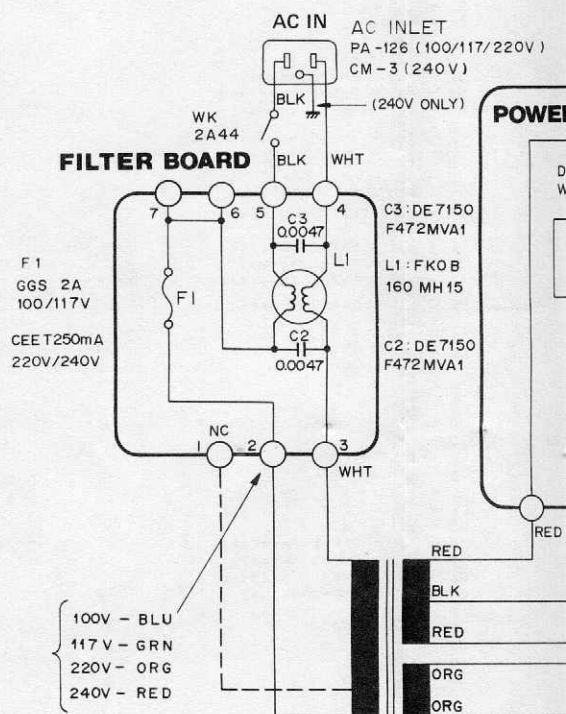
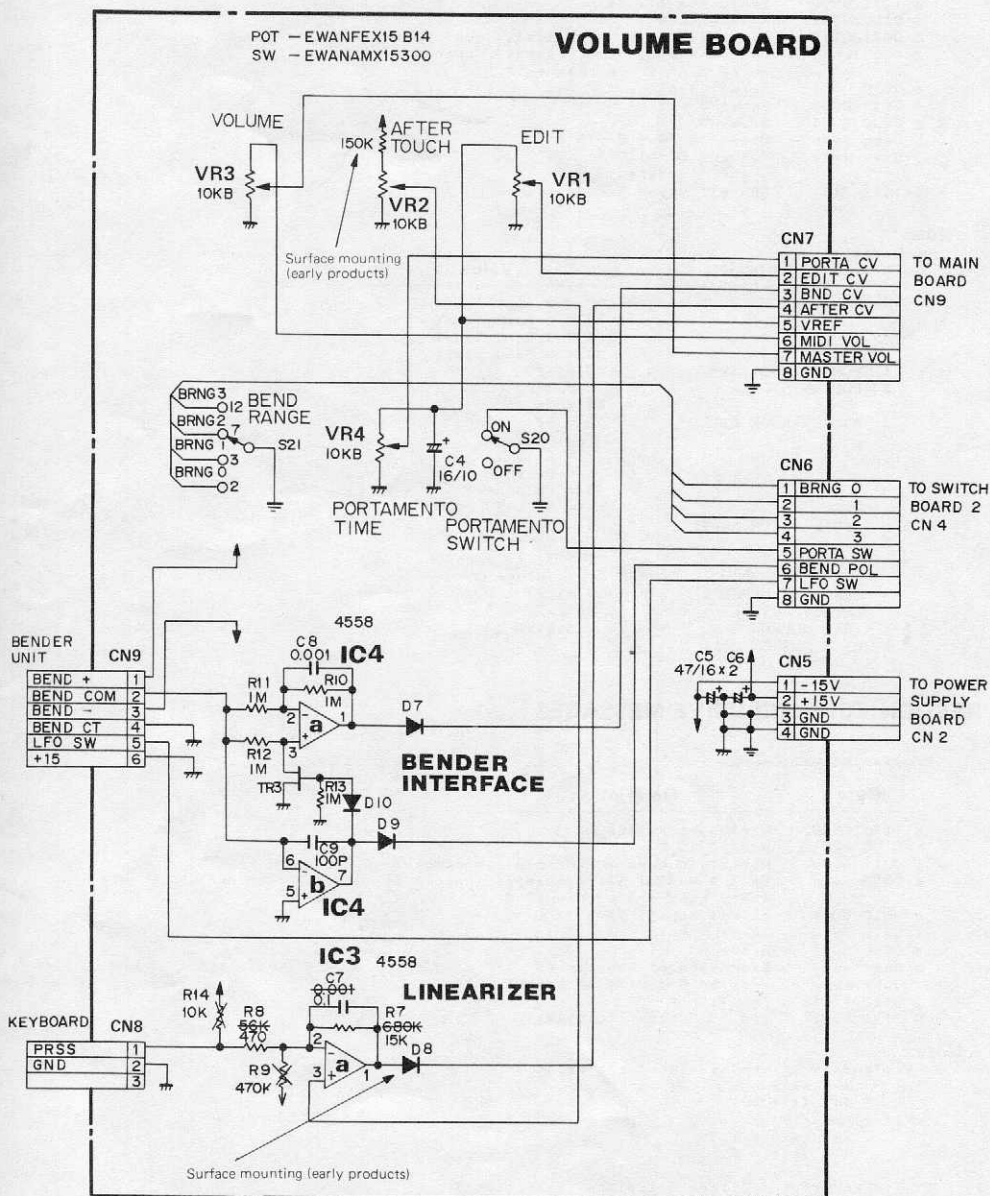
FILTER

76149102



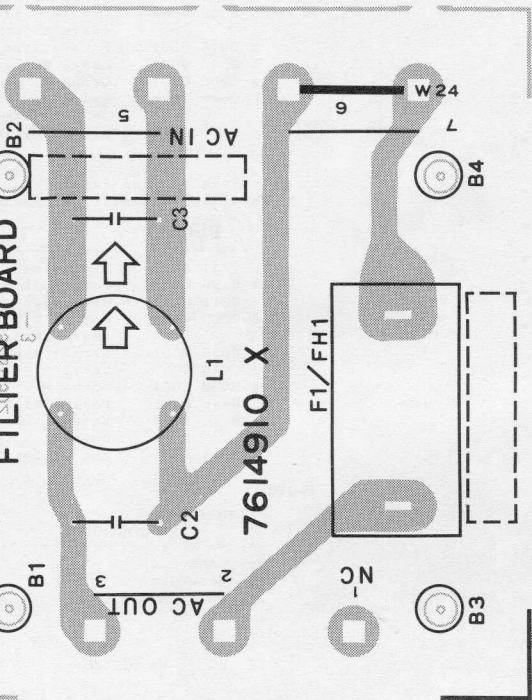
Roland JX-8P
FILTER BOARD

Replacement
splittable PCB
Switch Board



TER BOARD

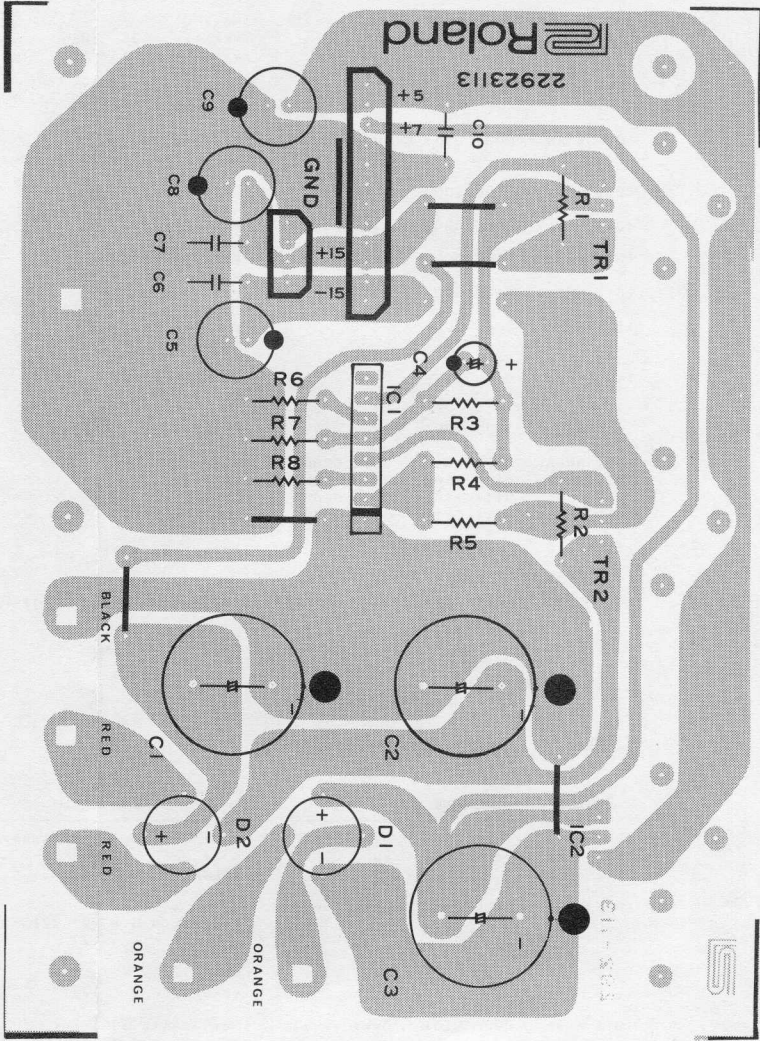
4910X (pcb 2292311502-3)



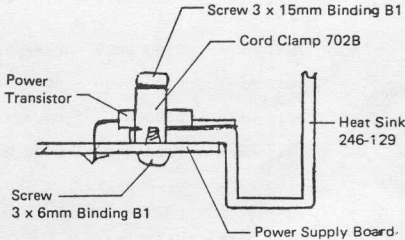
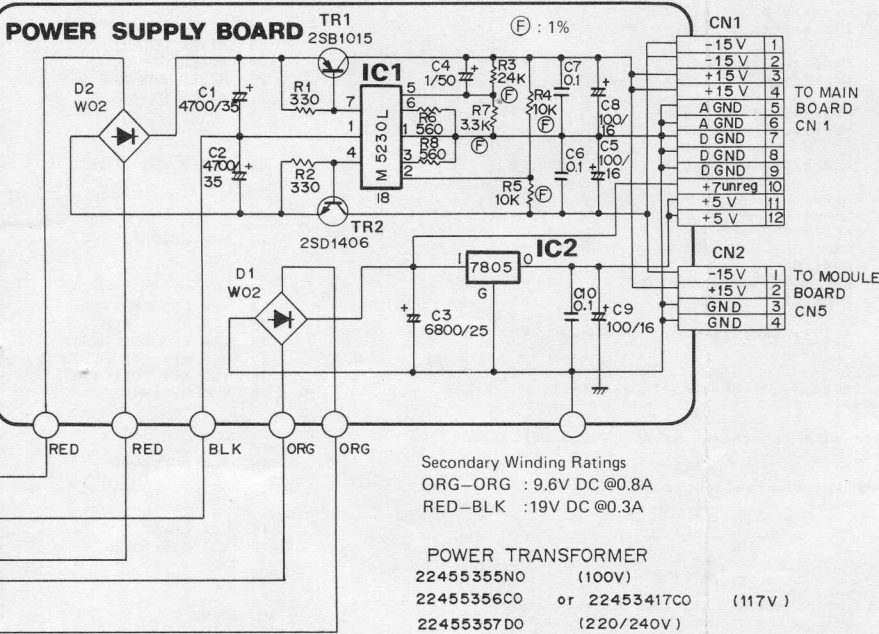
placement for Filter Board will be supplied in the complete PCB set of Filter Board, Volume Board and Pitch Board 2.

POWER SUPPLY BOARD

76149180 (pcb 22923112)



(220V)



MIDI IMPLEMENTATION

1. TRANSMITTED DATA

Status	Second	Third	Description	
1001 nnnn	0kkk kkkk	0000 0000	Note OFF kkkkkkk = 36 - 96	
1001 nnnn	0kkk kkkk	0vvv vvvv	Note ON kkkkkkk = 36 - 96 vvvvvvv = 1 - 127	
1011 nnnn	0000 0001	0vvv vvvv	Modulation vvvvvvv = 0 - 127	*1
1011 nnnn	0000 0101	0vvv vvvv	Portamento time vvvvvvv = 0 - 127	*1
1011 nnnn	0100 0000	0xxx xxxx	Hold ON xxxxxxx = 1 - 127	*1
1011 nnnn	0100 0000	0000 0000	Hold OFF	*1
1011 nnnn	0100 0001	0xxx xxxx	Portamento ON xxxxxxx = 1 - 127	*1
1011 nnnn	0100 0001	0000 0000	Portamento OFF	*1
1100 nnnn	0ppp pppp		Program Change ppppppp = 0 - 127	*1, *2
1101 nnnn	0vvv vvvv		Channel After Touch vvvvvvv = 0 - 127	*1
1110 nnnn	0000 0000	0vvv vvvv	Pitch Bender Change	*1
1011 nnnn	0111 1011	0000 0000	ALL NOTES OFF	
1011 nnnn	0111 1100	0000 0000	OMNI OFF	
1011 nnnn	0111 1101	0000 0000	OMNI ON	
1011 nnnn	0111 1111	0000 0000	POLY ON	
1111 1110			Active Sensing	*1

Notes:

*1 Transmitted if the corresponding function switch is ON.

*2 0 - 31 : Internal Memory
32 - 63 : Memory Cartridge
64 - 95 : Preset #1
95 - 127 : Preset #2

2. RECOGNIZED RECEIVE DATA

Status	Second	Third	Description	
1000 nnnn	0kkk kkkk	0vvv vvvv	Note OFF, velocity ignored	
1001 nnnn	0kkk kkkk	0000 0000	Note OFF kkkkkkk = 0 - 127 (21 - 108)	*1
1001 nnnn	0kkk kkkk	0vvv vvvv	Note ON kkkkkkk = 0 - 127 (21 - 108) vvvvvvv = 1 - 127	*1
1011 nnnn	0000 0001	0vvv vvvv	Modulation vvvvvvv = 0 - 127	*3
1011 nnnn	0000 0101	0vvv vvvv	Portamento time vvvvvvv = 0 - 127	*3
1011 nnnn	0000 0111	0vvv vvvv	Volume vvvvvvv = 0 - 127	*3
1011 nnnn	0100 0000	0xxx xxxx	Hold ON xxxxxxx = 1 - 127	*3
1011 nnnn	0100 0000	0000 0000	Hold OFF	*3
1011 nnnn	0100 0001	0xxx xxxx	Portamento ON xxxxxxx = 1 - 127	*3
1011 nnnn	0100 0001	0000 0000	Portamento OFF	*3
1100 nnnn	0ppp pppp		Program Change ppppppp = 0 - 127	*3, *4
1101 nnnn	0vvv vvvv		Channel After Touch vvvvvvv = 0 - 127	*3
1110 nnnn	0000 0000	0vvv vvvv	Pitch Bender Change	*3
1011 nnnn	0111 1010	0000 0000	Local OFF	
1011 nnnn	0111 1010	0111 1111	Local ON	
1011 nnnn	0111 1011	0000 0000	ALL NOTES OFF	
1011 nnnn	0111 1100	0000 0000	OMNI OFF	*2
1011 nnnn	0111 1101	0000 0000	OMNI ON	*2
1011 nnnn	0111 1110	0000 mmmm	ALL NOTES OFF (MONO ON)	*2
1011 nnnn	0111 1111	0000 0000	POLY ON	*2
1111 1110			Active Sensing	*3

Notes:

*1 Note numbers outside of the range 21 - 108 are transposed to the nearest octave inside this range.

*2 Mode Messages (123 - 127) are also recognized as ALL NOTES OFF. MONO ON messages are ignored.

*3 Received if the corresponding function switch is ON.

*4 0 - 31 : Internal Memory
32 - 63 : Memory Cartridge
64 - 95 : Preset #1
95 - 127 : Preset #2

When the memory cartridge is not connected, 32 thru 63 are ignored.

3. TRANSMITTED EXCLUSIVE MESSAGES

3.1 All Tone Parameters (APR),
When the 'Tone Button' is pressed.

Byte	Description
a 1111 0000	Exclusive status
b 0100 0001	Roland ID #
c 0011 0101	Operation code = APR (all parameters)
d 0000 nnnn	Unit # = MIDI basic channel, nnnn = 0 - 15 where nnnn + 1 = channel #
e 0010 0001	Format type (JX-8P)
f 0010 0000	Level # = 1
g 0000 0001	Group #
h 0vvv vvvv	Value (0 - 127)
:	In sequence (59 byte total)
i 1111 0111	End of System Exclusive

3.2 Individual Tone Parameter (IPR)
When the Parameter is changed.

Byte	Description
a 1111 0000	Exclusive status
b 0100 0001	Roland ID #
c 0011 0110	Operation code = IPR (individual parameter)
d 0000 nnnn	Unit # = MIDI basic channel, nnnn = 0 - 15 where nnnn + 1 = channel #
e 0010 0001	Format type
f 0010 0000	Level # = 1
g 0000 0001	Group #
h 0ppp pppp	Parameter # (0 - 58)
i 0vvv vvvv	Value (0 - 127)
:	h and i (repetitively)
j 1111 0111	End of System Exclusive

Note:

Parameter #	Function	Value
0-9	NAME-0..9	In ASCII
10	Undefined	
11	DCO-1 RANGE	0 - 31 = 16' 32 - 63 = 8' 64 - 95 = 4' 96 - 127 = 2'
12	DCO-1 WAVEFORM	0 - 31 = Noise 32 - 63 = Sawtooth Wave 64 - 95 = Pulse Wave 96 - 127 = Square Wave
13	DCO-1 TUNE	0 - 127 (-1 oct -- +1 oct)
14	DCO-1 LFO MOD DEPTH	0 - 127
15	DCO-1 ENV MOD DEPTH	0 - 127
16	DCO-2 RANGE	0 - 31 = 16' 32 - 63 = 8' 64 - 95 = 4' 96 - 127 = 2'
17	DCO-2 WAVEFORM	0 - 31 = Noise 32 - 63 = Sawtooth Wave 64 - 95 = Pulse Wave 96 - 127 = Square Wave
18	DCO-2 CROSSMOD	0 - 31 = OFF 32 - 63 = SYNC 1 64 - 95 = SYNC 2 96 - 127 = XMOD (cross modulation)
19	DCO-2 TUNE	0 - 127 (-1 oct -- +1 oct)
20	DCO-2 FINE TUNE	0 - 127 (-50 cent -- +50 cent)
21	DCO-2 LFO MOD DEPTH	0 - 127
22	DCO-1 ENV MOD DEPTH	0 - 127
23	Undefined	
24	Undefined	
25	Undefined	
26	DCO DYNAMICS	0 - 31 = OFF 32 - 63 = 1 64 - 95 = 2 96 - 127 = 3
27	DCO ENV MODE	0 - 31 = ENV-2 Inverted 32 - 63 = ENV-2 Normal 64 - 95 = ENV-1 Inverted 96 - 127 = ENV-1 Normal
28	MIXER DCO-1	0 - 127
29	MIXER DCO-2	0 - 127
30	MIXER ENV MOD DEPTH	0 - 127
31	MIXER DYNAMICS	0 - 31 = OFF 32 - 63 = 1 64 - 95 = 2 96 - 127 = 3
32	MIXER ENV MODE	0 - 31 = ENV-2 Inverted 32 - 63 = ENV-2 Normal 64 - 95 = ENV-1 Inverted 96 - 127 = ENV-1 Normal
33	HPF CUTOFF FREQ	0 - 31 = 0 32 - 63 = 1 64 - 95 = 2 96 - 127 = 3
34	VCF CUTOFF FREQ	0 - 127
35	VCF RESONANCE	0 - 127
36	VCF LFO MOD DEPTH	0 - 127
37	VCF ENV MOD DEPTH	0 - 127
38	VCF KEY FOLLOW	0 - 127
39	VCF DYNAMICS	0 - 31 = OFF 32 - 63 = 1 64 - 95 = 2 96 - 127 = 3
40	VCF ENV MODE	0 - 31 = ENV-2 Inverted 32 - 63 = ENV-2 Normal 64 - 95 = ENV-1 Inverted 96 - 127 = ENV-1 Normal
41	VCA LEVEL	0 - 127
42	VCA DYNAMICS	0 - 31 = OFF 32 - 63 = 1 64 - 95 = 2 96 - 127 = 3
43	CHORUS	0 - 31 = OFF 32 - 63 = 1 64 - 127 = 2

44	LFO WAVEFORM	0 - 31 = Random 32 - 63 = Square Wave 64 - 127 = Triangle Wave
45	LFO DELAY TIME	0 - 127
46	LFO RATE	0 - 127
47	ENV-1 ATTACK TIME	0 - 127
48	ENV-1 DECAY TIME	0 - 127
49	ENV-1 SUSTAIN LEVEL	0 - 127
50	ENV-1 RELEASE TIME	0 - 127
51	ENV-1 KEY FOLLOW	0 - 31 = OFF 32 - 63 = 1 64 - 95 = 2 96 - 127 = 3
52	ENV-2 ATTACK TIME	0 - 127
53	ENV-2 DECAY TIME	0 - 127
54	ENV-2 SUSTAIN LEVEL	0 - 127
55	ENV-2 RELEASE TIME	0 - 127
56	ENV-2 KEY FOLLOW	0 - 31 = OFF 32 - 63 = 1 64 - 95 = 2 96 - 127 = 3
57	Undefined	
58	VCA ENV MODE	0 - 63 = Gate 64 - 127 = ENV-2 Normal

- 3.3 All Patch Parameters (APR)
When the 'Patch Chain' button is pressed.

Byte	Description
a 1111 0000	Exclusive status
b 0100 0001	Roland ID #
c 0011 0101	Operation code = APR (all parameters)
d 0000 nnnn	Unit # = MIDI basic channel, nnnn = 0 - 15 where nnnn + 1 = channel #
e 0010 0001	Format type (JX-8P)
f 0011 0000	Level # = 2
g 0000 0001	Group #
h 0vvv vvvv	Value (0 - 127)
:	In sequence (9 byte total)
i 1111 0111	End of System Exclusive

- 3.4 Individual Patch Parameter (IPR)
When the Patch Parameter is changed.

Byte	Description
a 1111 0000	Exclusive status
b 0100 0001	Roland ID #
c 0011 0110	Operation code = IPR (individual parameter)
d 0000 nnnn	Unit # = MIDI basic channel, nnnn = 0 - 15 where nnnn + 1 = channel #
e 0010 0001	Format type
f 0011 0000	Level # = 2
g 0000 0001	Group #
h 0ppp pppp	Parameter # (0 - 8)
i 0vvv vvvv	Value (0 - 127)
:	h and i (repetitively)
j 1111 0111	End of System Exclusive

Note:

Parameter #	Function	Value
0	BEND RANGE	0 = 2 Semi Tones 32 = 3 Semi Tones 64 = 4 Semi Tones 96 = 7 Semi Tones
1	PORTAMENTO TIME	0 - 127
2	PORTAMENTO SW	0 = OFF 64 = ON
3	ASSIGN MODE SELECT	0 = Poly-1 1 = Unison-1 2 = Solo-1 4 = Poly-2 5 = Unison-2 6 = Solo-2
4	AFTER TOUCH SELECT	0 = OFF 1 = Vibrato ON 2 = Brilliance ON 4 = Volume ON
5	BEND LFO DEPTH	0 - 127
6	UNISON DETUNE	0 - 127
7	TOPE NUMBER	0 - 31
8	BANK NUMBER	0 - 3

4. RECOGNIZED EXCLUSIVE MESSAGES

- 4.1 Program number (PCR)

Byte	Description
a 1111 0000	Exclusive status
b 0100 0001	Roland ID #
c 0011 0100	Operation code = PCR (program number)
d 0000 nnnn	Unit # = MIDI basic channel, nnnn = 0 - 15 where nnnn + 1 = channel #
e 0010 0001	Format type (JX-8P)
f 0010 0000	Level # = 1
g 0000 0001	Group #
h 0xxx xxxx	Extension of program #
i 0ppp pppp	Program # ('Program Number')
j 0fff ffff	Function #
k 1111 0111	End of System Exclusive

Note:

Write data to memory with the program #
xxx xxxx = 0
fff ffff = 2
Manual mode Flag
xxx xxxx = 127
fff ffff = 0

- 4.2 Other Exclusive messages described in section 3.

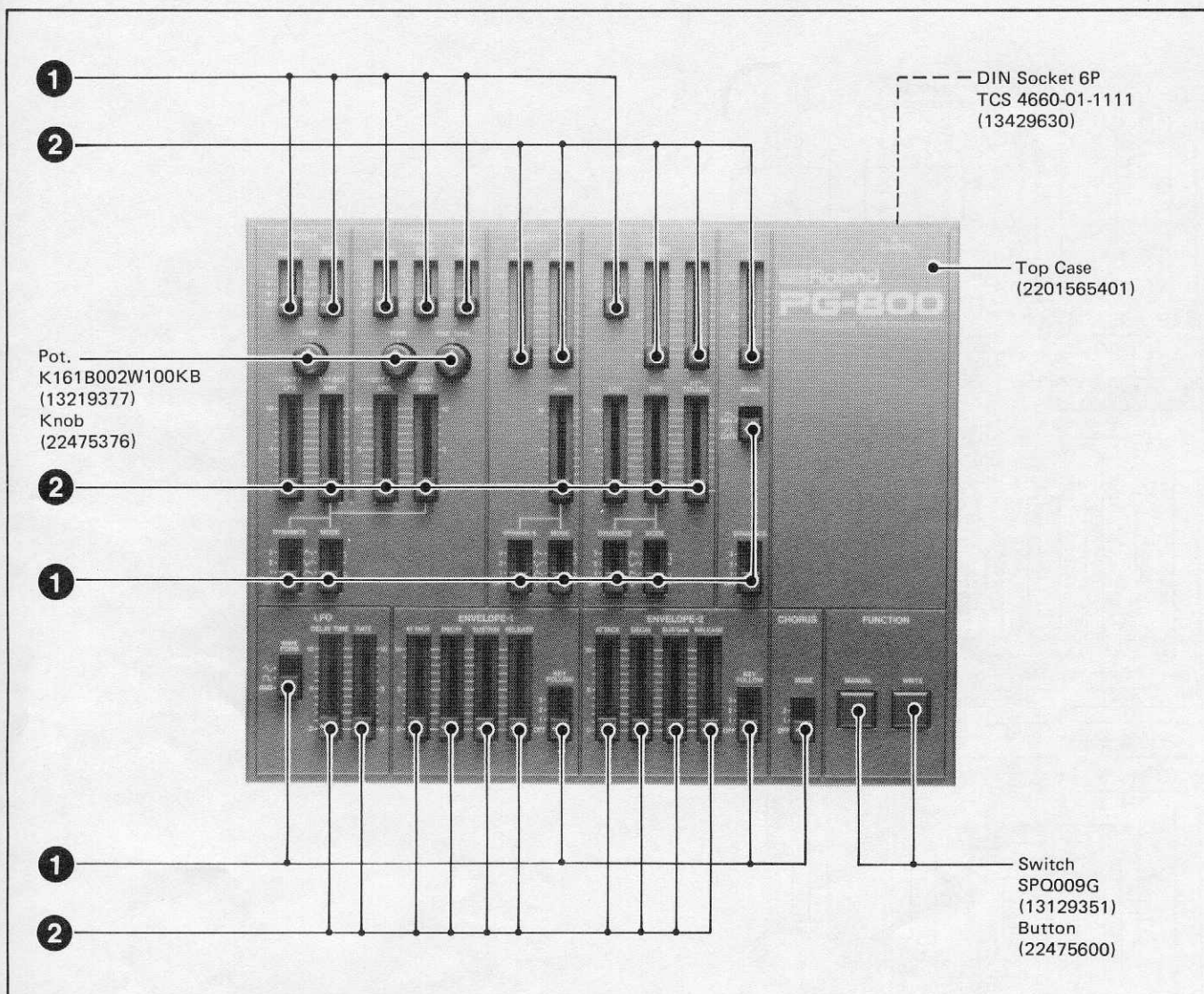
PG-800

SPECIFICATIONS

Dimensions 265(W) x 215(D) x 27(H) mm

10-7/16 x 8-7/16 x 1-1/16 in

Weight 680g / 1 lb 8 oz



- ① Pot. EWAKF8X15B15 100KB (13379868)
② Pot. EWANFEX15B15 100KB (13339453)
- } Knob (22475375)

PARTS LIST (PG-800)

CASE

2201565401	Top Case
22015653	Bottom Case

KNOB, BUTTON

22475375	Knob	slide pot
22475376	Knob	rotary pot
22475600	Button	push switch

SOCKET

13429630	TCS4660-01-1111	6P DIN
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PCB

7934603000	Control Board (pcb 2292312301)
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IC

15179202	μPD8048HC-191	CPU
15129150	μPD7001C	A/D converter
15159113H0	HD14051BP	Single 8-CH MUX/DMUX

TRANSISTOR

15129150	2SD880-Y
15129107	2SC945-Q
15119133	DTA114C
15129150	DTC114C

RESONATOR

12389800	KMFC1005T1
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POTENTIOMETER

13219377	K161B002W-100KB
13339453	EWANFEX15-B15
13339868	EWAKF8X15-B15

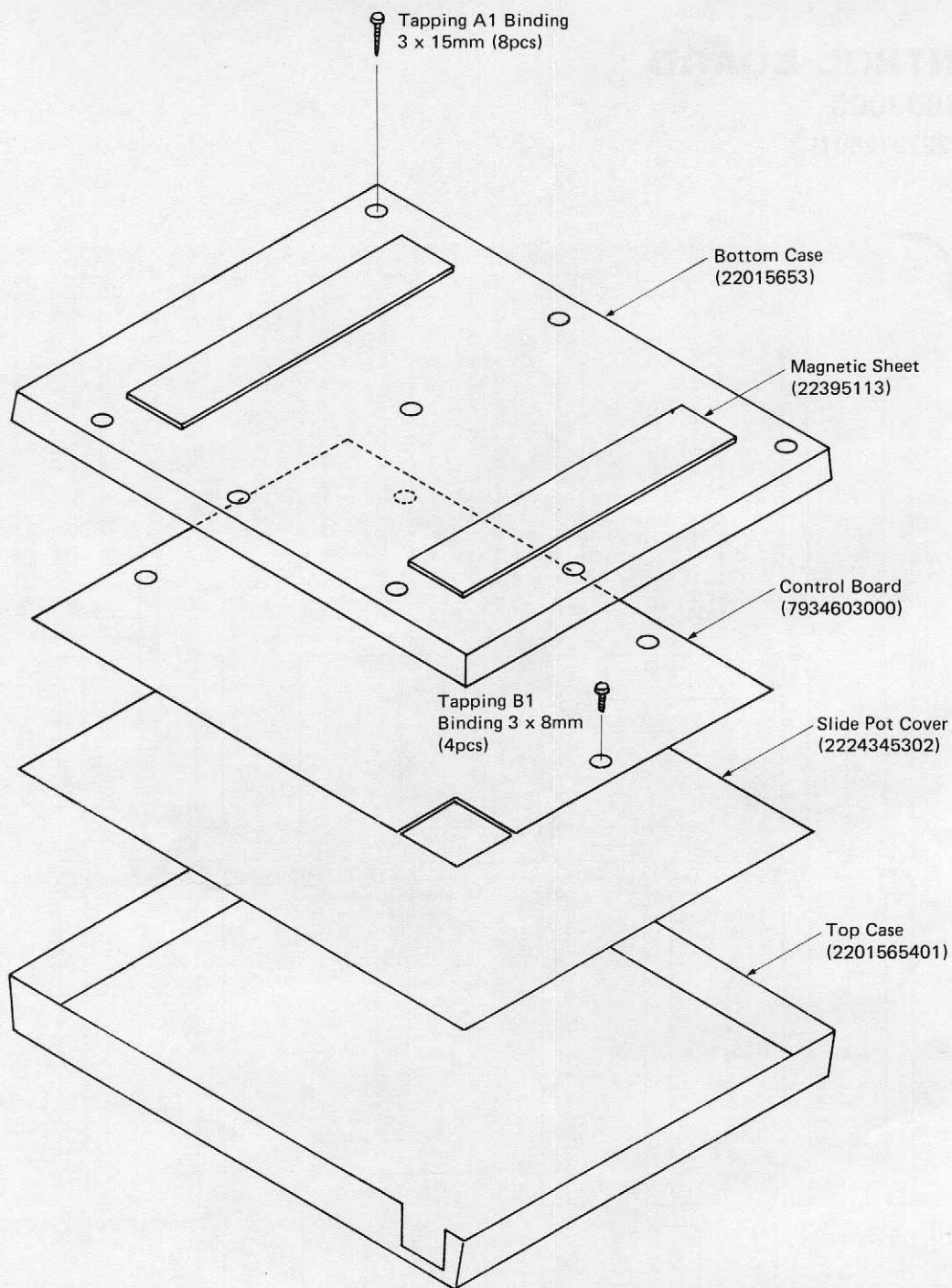
slide with c

SWITCH

13129351	SPQ009G
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RESISTOR ARRAY

13919310	EM-8 103J 10K x 8
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EMI FILTER

13529105 DSS31055D223S

DIODE

15019103 1S2473
150196130Z 05Z-5.6

zener

OTHERS

2224345301 Slider Cover
22395113 Magnetic Sheet
22013703 Carrying Case

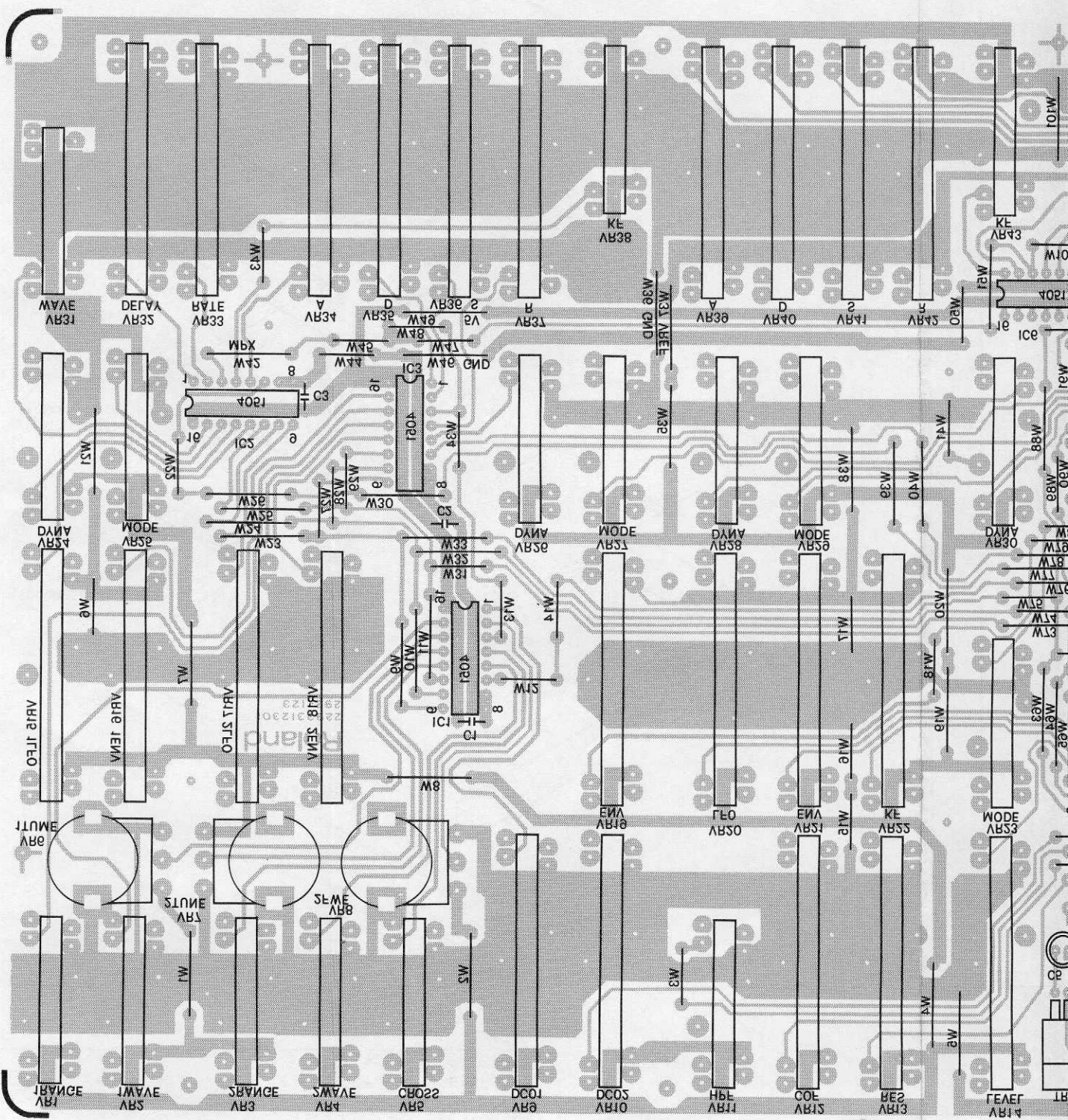
commercially available

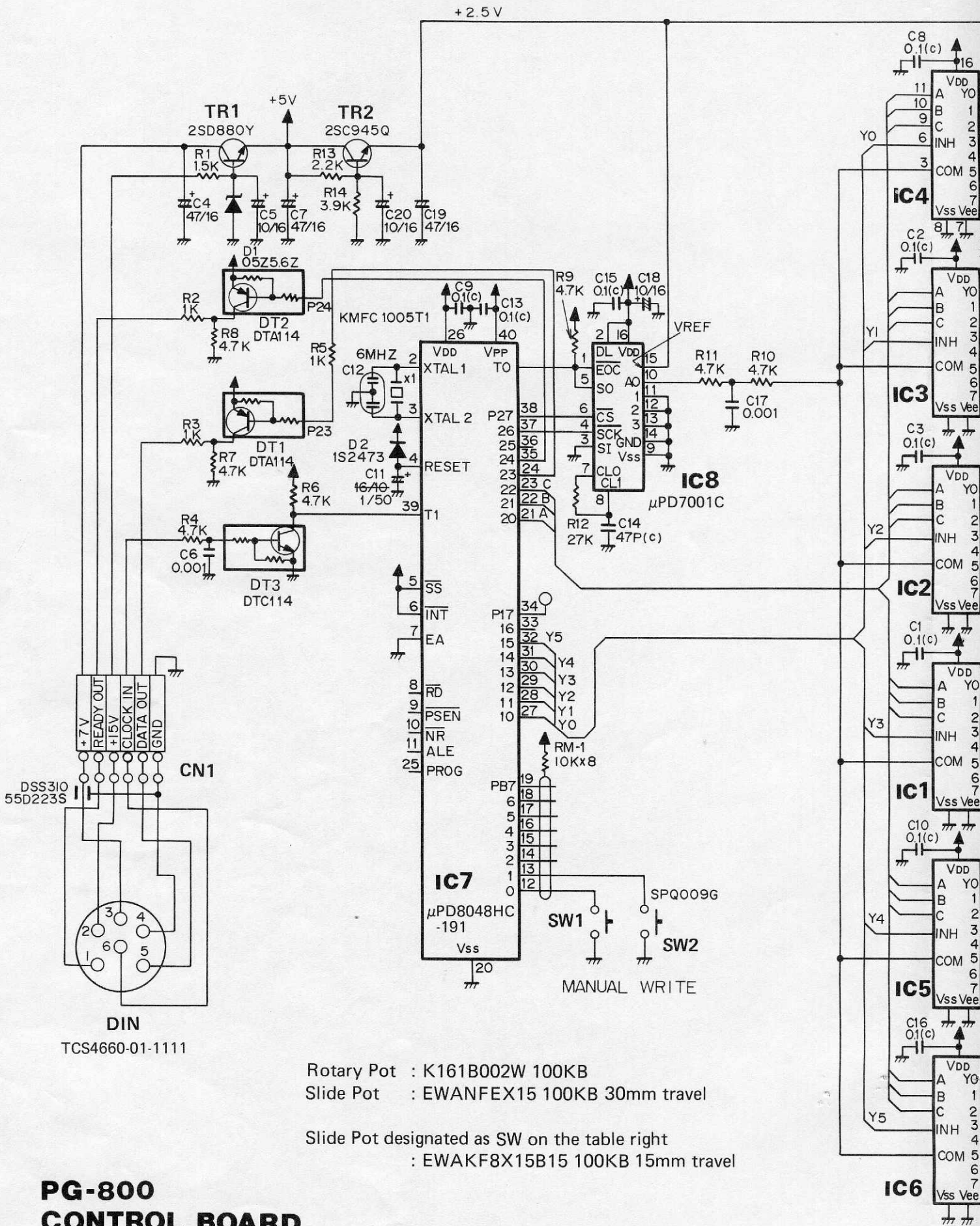
digital
digital

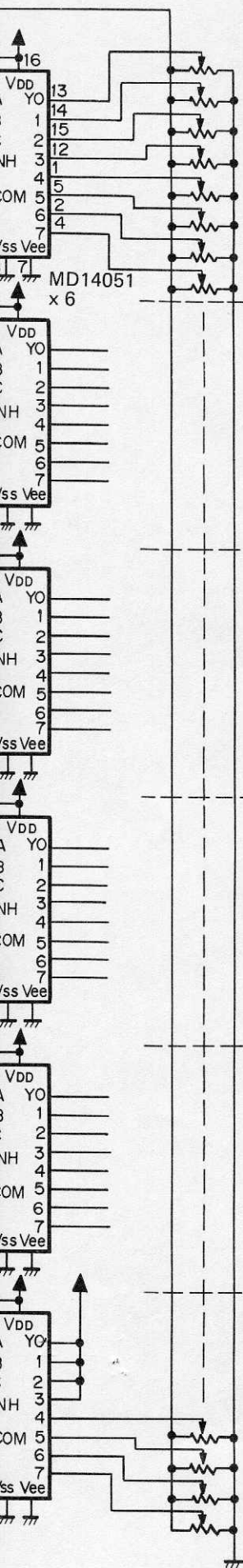
6MHz, ceramic

rotary
slide 30mm travel
slide with click 15mm travel

(pcb 2292312301)







LEGEND	VR	FUNCTION				
		POT SLIDER	POT ROTARY	SW 4P	SW 3P	SW 2P
VCF KEYF	VR22	<input type="radio"/>				
VCF ENV	VR21	<input type="radio"/>				
VCF LFO	VR20	<input type="radio"/>				
VCA LEVEL	VR14	<input type="radio"/>				
VCF RES	VR13	<input type="radio"/>				
VCF FREQ	VR12	<input type="radio"/>				
HPF	VR11			<input type="radio"/>		
MIX DC02	VR10	<input type="radio"/>				
DC01 RANGE	VR1			<input type="radio"/>		
DC01 ENV	VR16	<input type="radio"/>				
DC02 LFO	VR17	<input type="radio"/>				
DC02 ENV	VR18	<input type="radio"/>				
ENV1 D	VR35	<input type="radio"/>				
MIX DYNA	VR26			<input type="radio"/>		
ENV1 S	VR36	<input type="radio"/>				
ENV1 R	VR37	<input type="radio"/>				
DCO DYNA	VR24			<input type="radio"/>		
LFO WAVE	VR31				<input type="radio"/>	
DCO ENV MODE	VR25			<input type="radio"/>		
DC01 LFO	VR15	<input type="radio"/>				
LFO DELAY	VR32	<input type="radio"/>				
ENV1 A	VR34	<input type="radio"/>				
LFO RATE	VR33	<input type="radio"/>				
ENV1 KEYF	VR38			<input type="radio"/>		
DC02 TUNE	VR7		<input type="radio"/>			
DC01 TUNE	VR6		<input type="radio"/>			
DC01 WAVE	VR2			<input type="radio"/>		
DC02 RANGE	VR3			<input type="radio"/>		
MIX DC01	VR9	<input type="radio"/>				
DC2 WAVE	VR4			<input type="radio"/>		
DC02 FINE	VR8		<input type="radio"/>			
DC02 CROSS	VR5			<input type="radio"/>		
VCF ENV MODE	VR29			<input type="radio"/>		
VCF DYNA	VR28			<input type="radio"/>		
MIX ENV MODE	VR27			<input type="radio"/>		
VCA DYNA	VR30			<input type="radio"/>		
ENV2 S	VR41	<input type="radio"/>				
MIX ENV	VR19	<input type="radio"/>				
ENV2 R	VR42	<input type="radio"/>				
VCA MODE	VR23					<input type="radio"/>
undefind						
undefind						
undefind						
undefind						
ENV2 KEYF	VR43			<input type="radio"/>		
ENV2 D	VR40	<input type="radio"/>				
CHORUS	VR44				<input type="radio"/>	
ENV2 A	VR39	<input type="radio"/>				